Technical Service Guide
for SD3600

contex
WHEN IMAGING MATTERS

Revision table

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NA52A - SD3600

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Introduction

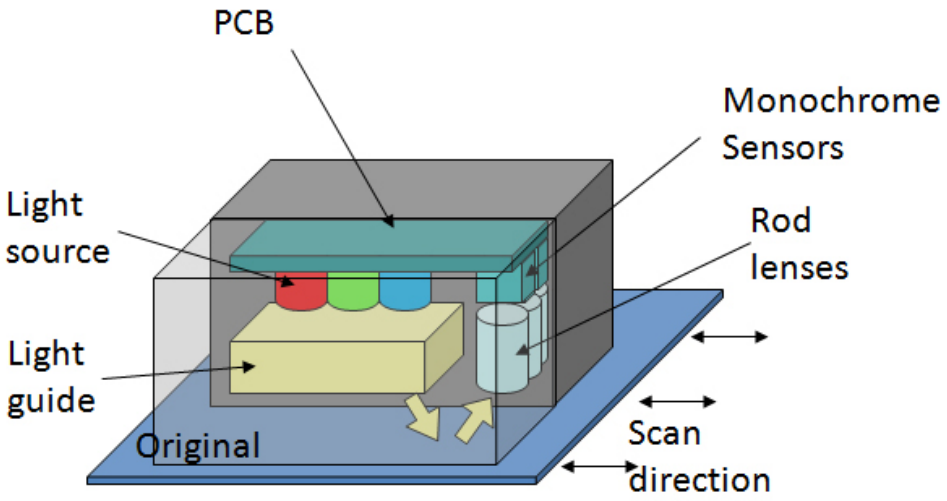
Introduction to CIS Technology

CIS Element

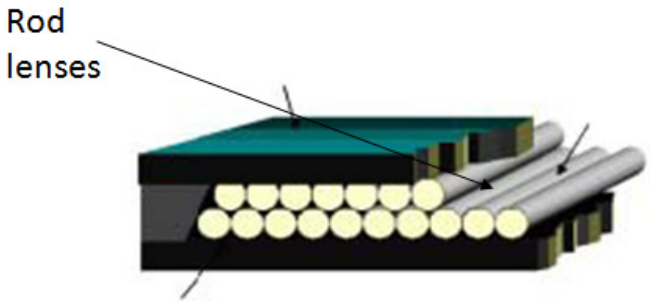
CIS Element Design
Focus
Light

Example of a CIS Element, **C**ontact **I**mage **S**ensor

CIS Element Design

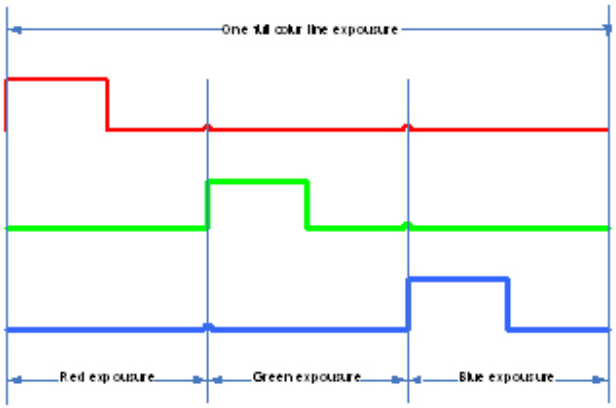


The CIS Element consist of 3 major parts: sensor, lens and light source.
The Light source is 3 LEDs in RGB that are lit one at a time.
The sensor consists of 10368 individual monochrome sensors.



The purpose of the lens is to channel the light from the “pixels” on the image to the sensors. There is no magnification in the lens (1x1).

Due to the very short focal length, the focus depth is limited. The original has to be in contact with the surface of the glass plate in order to be in focus.



The LED’s flash one at a time, capturing one color at a time.

Design

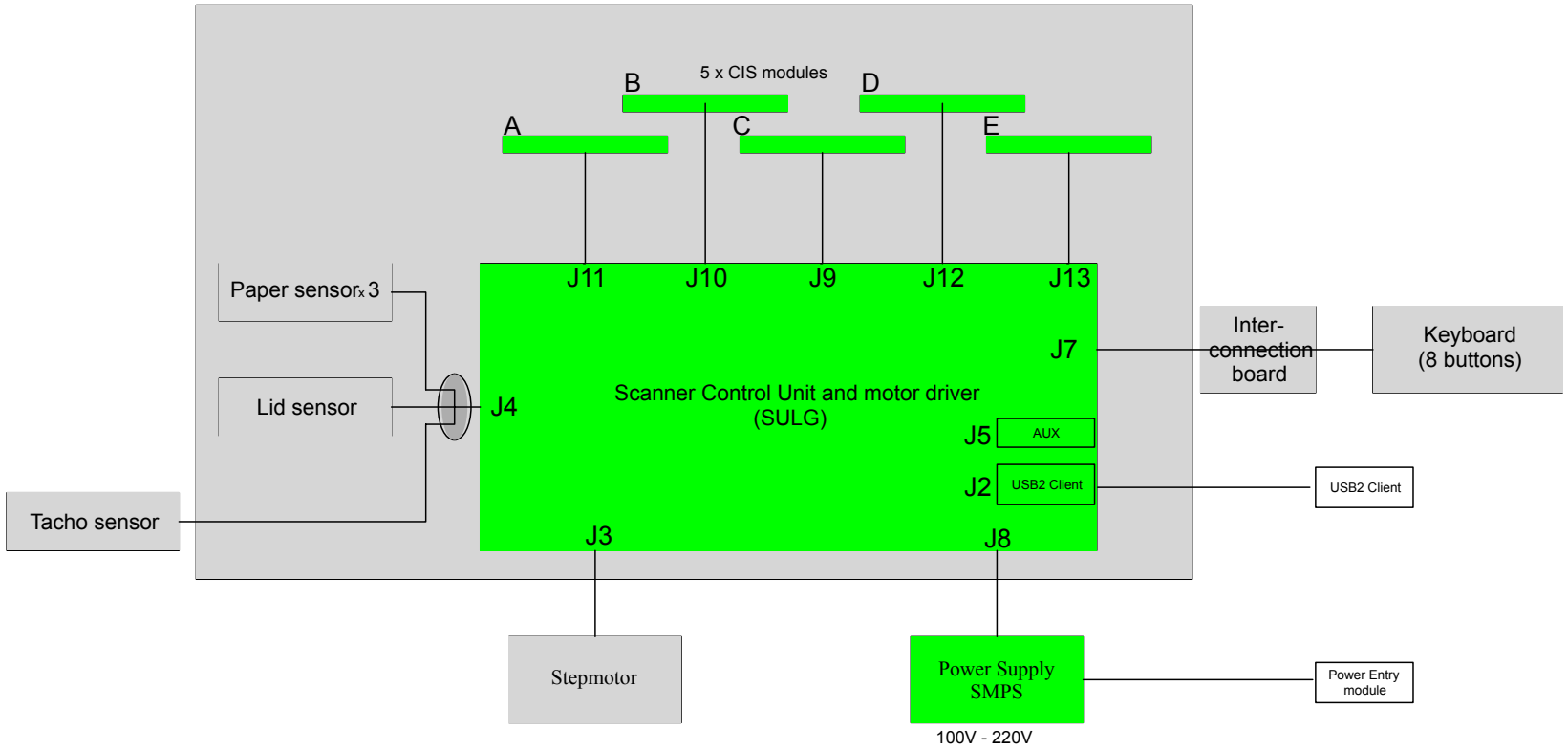
Design

Design

Electronics

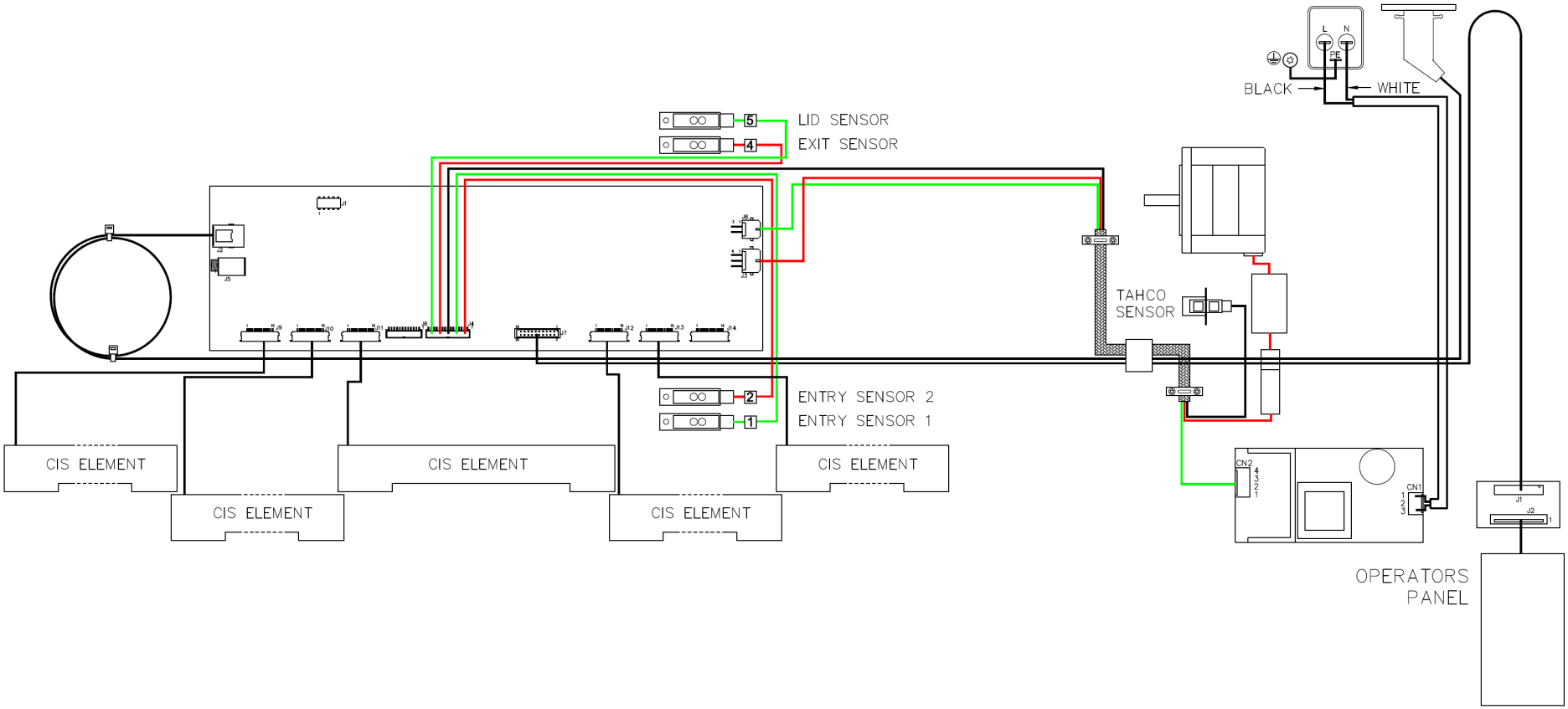
- Block Diagram
- Wiring Diagram
- Circuit board layout's
- CIS Unit Construction

Block Diagram



Block Diagram NA53A

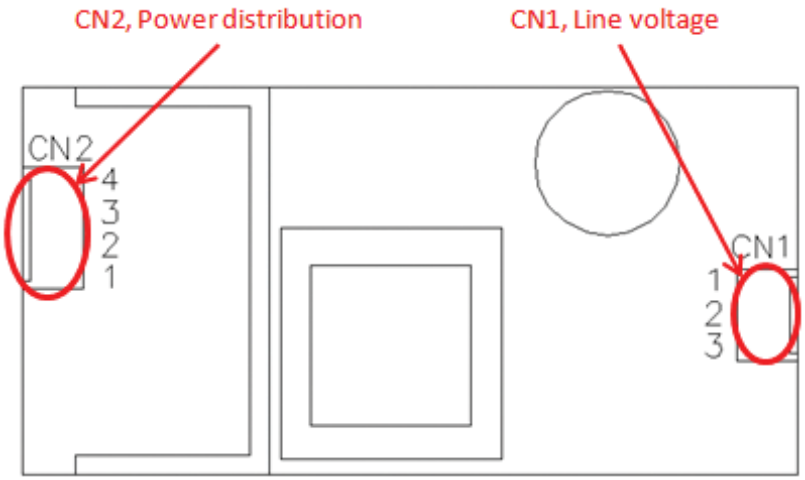
Wiring Diagram



Power Supply layout with measuring points (SMPS)

CAUTION

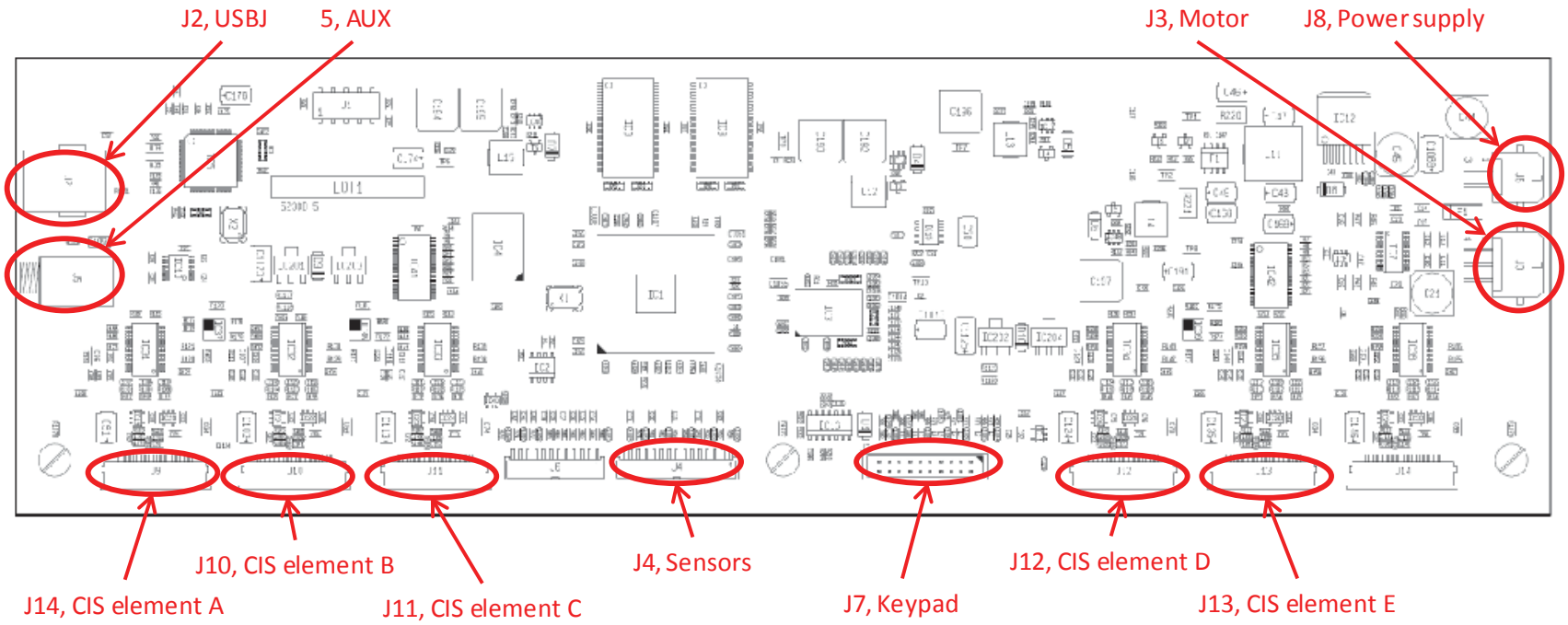
CAUTION
DOUBLE POLE/NEUTRAL FUSING



CN2	GND	
pin 1 – 2	pin 3 – 4	24V +/-2V

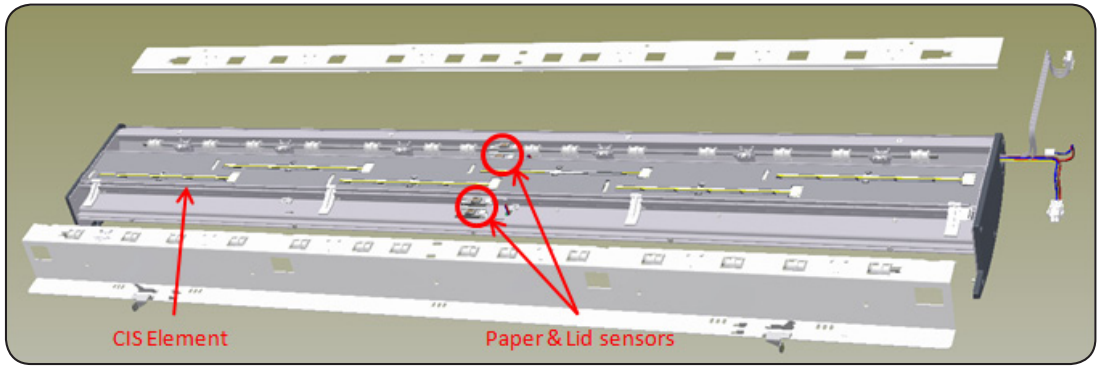
Keypad

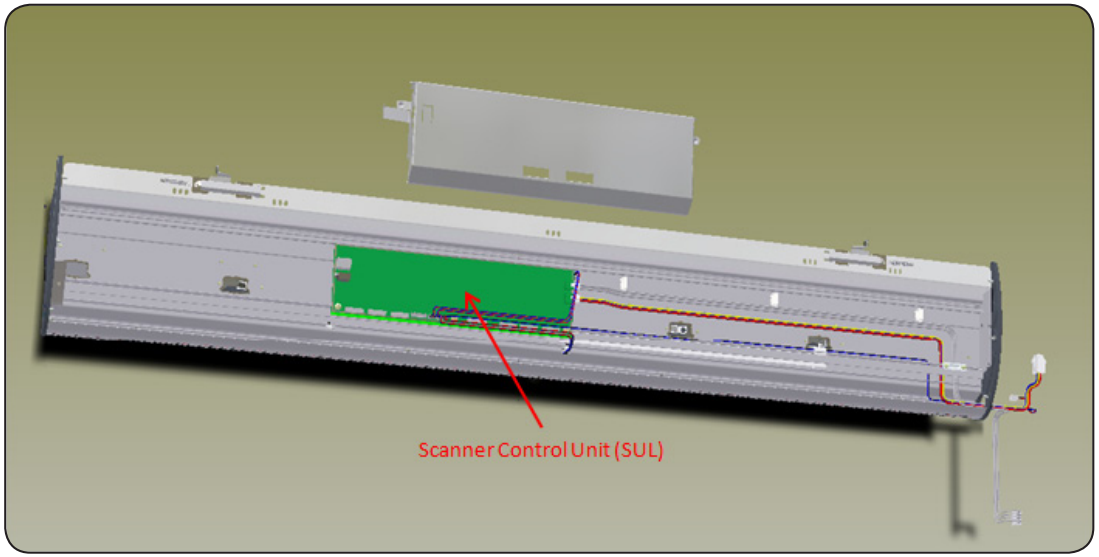
Scanner Controller Board Layout (SULG)



CIS Unit Construction

CIS Unit Construction





CIS Unit.
Warning: The CIS unit is factory mounted and must not be Disassembled further than replacing Scanner Control Unit, Paper/Lid sensors, Glass plate and USB cable.
Ignoring this warning may cause failures that can not be corrected in the field.

Troubleshooting

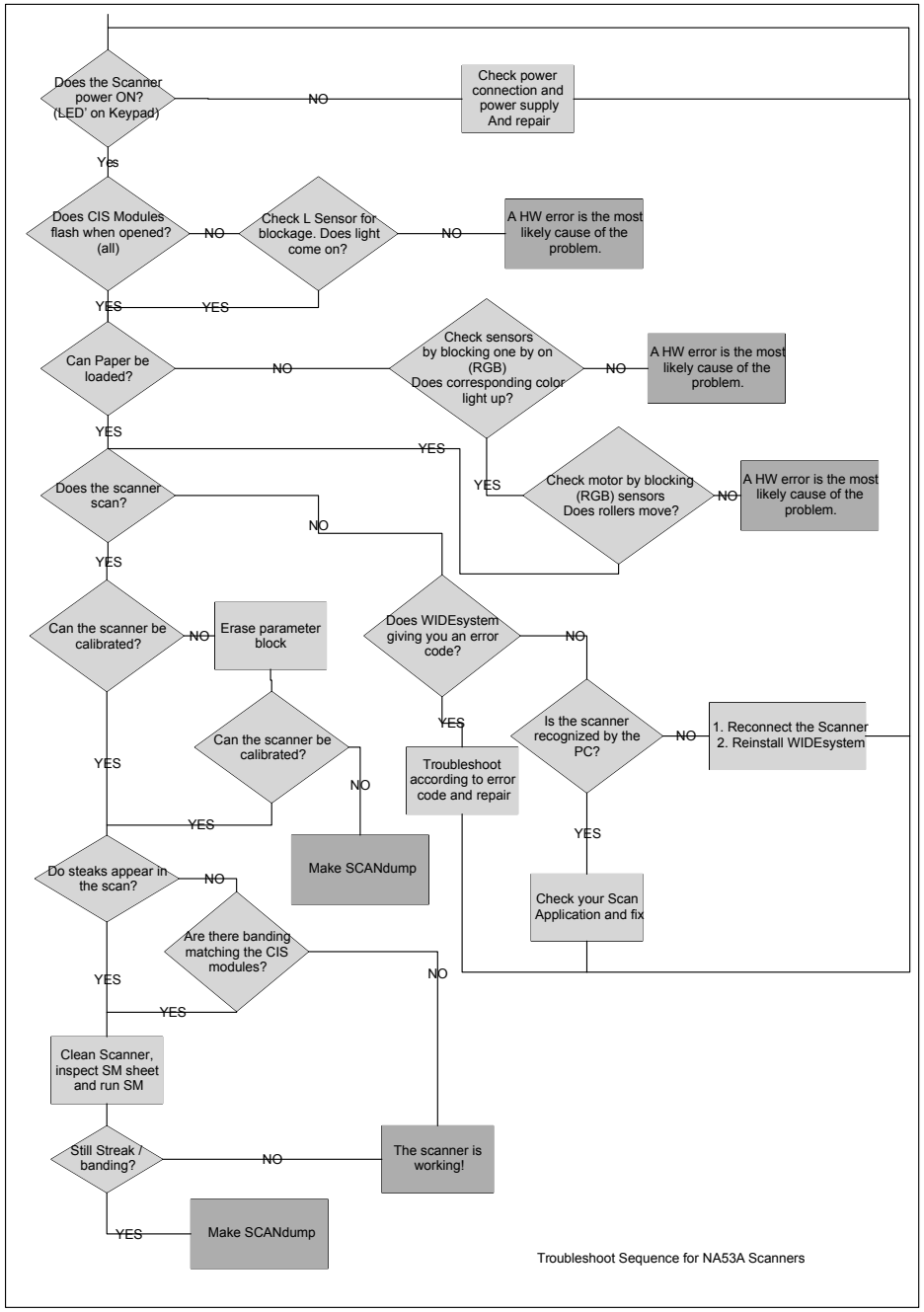
Troubleshooting

Troubleshooting Sequence
Image Quality problems
- Dust related errors
- Calibration related errors
- Crumpled or Folded originals

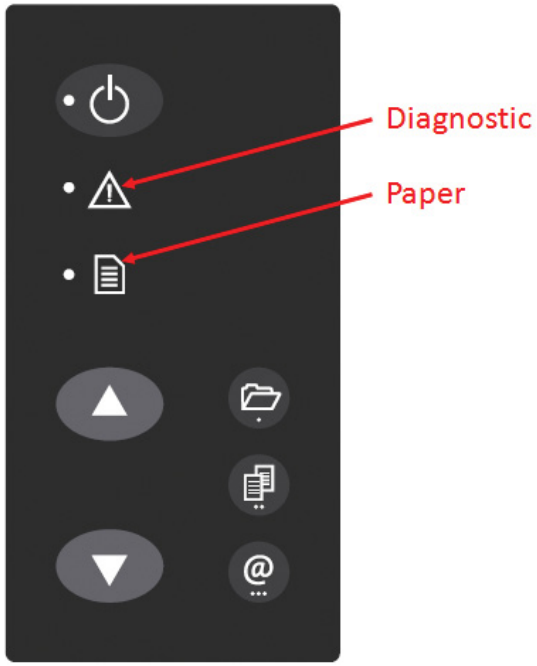
Note!
Before replacing any electrical parts such as SUx (Scanner Control Unit) or the CIS Unit, the parameter block should be erased and the scanner calibrated. This will solve the problem in most cases, especially if the reported problem is about image quality or identifying the calibration sheet.
The Pressure Rollers and the Glass Plate should also be inspected for wear and tear.

Troubleshooting Sequence

This is a suggested Troubleshooting Sequence and will work in most cases. There are always some gray zones, especially if the problem is related to image quality.



Error codes displayed on Keypad



Error Codes displayed on the Keypad
An error condition is indicated by a flashing Diagnostic Indicator. The error may be identified by an Error Code Number being displayed on the screen and/or by the following combinations of flashing (F) indicators on the Operator Panel:
See Appendix D for error code description.

Flash code	DIAGNOSTIC	PAPER
BOOT	F	F
ERR_GENERAL	F	OFF
ERR_SU	F	F
ERR_CB	F	2 x F
ERR_MDA	F	4 x F
ERR_SMC	F	5 x F

1 x F, 2 x F, ... means that the Paper Indicator flashes 1, 2, ... times every time the Diagnostic Indicator is turned ON.
F, F, means that both indicators are flashing simultaneously.

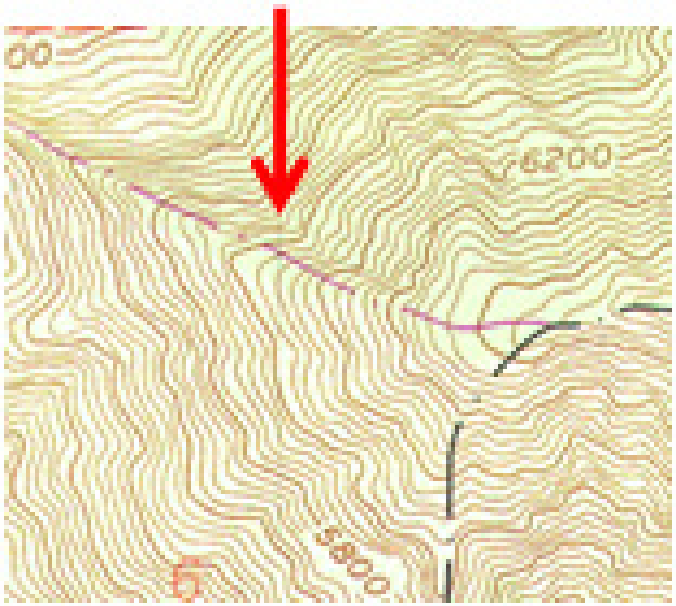
Banding Problems

Bad/no gray balance calibration (CIS module to module match).

Image Quality Problems

Scanning originals that have folds or is crumpled on a CIS scanner is often taken as a defect on the scanner, where it is actually a limitation of the used technology. Due to the very short distance from sensor to surface of the original, also called “Focal Length” we also have a very short “Focus Depth” meaning, if the original is NOT in contact with the glass plate it is very likely to be out of focus!

Dust Problems



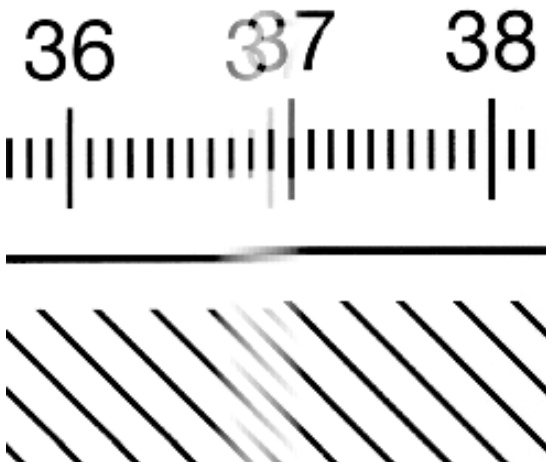
There are image quality problems that are not related to HW errors. These could be due to either insufficient cleaning, bad calibration or limitations in the CIS technology.

Streaks running in the scan direction which seems to appear and disappear during the scan is most likely caused by dust. Clean the scanner and the original. The streaks are often a darker shade of color.

Streaks that run in scan direction, that are color dependent or a lighter shade of the color, are often related to the calibration. Dust that was present in the scanner during calibration, but has been cleaned away since.

Stitching Problems

Other issues could be that the scanner simply needs to be calibrated, either because the parameter block has been erased, never been calibrated or that the scanner has been moved around.



Stitching problem between 2 CIS modules.

Part replacement

Part Replacement

Identifying parts

Parts list

Electronics

- CIS unit, complete (Scanner Control Board not included)
- Scanner Control Board (SULG)
- Power Supply (SMPS)
- Stepper Motor Assy
- Paper/ Lid Sensor
- Tacho Sensor
- USB Cable
- Harness
- RHS Cover and Keypad
- Power Entry Module

Mechanics

- LHS Cover
- Torsion Damper
- Pressure Rollers
- Damper Assy for CIS Bridge

Common Hand Tools

Torx	9 Straight
Torx	10 Straight
Torx	15 Straight & Angled
Torx	20 Straight & Angled
Wrench	7.0 mm

Note!
Before replacing any electrical parts such as SUx (Scanner Control Unit) or a Cameras, try calibrating the scanner in order to get the scanner to recreate the content of the parameter block. This will solve the problem in most cases.

Identifying parts

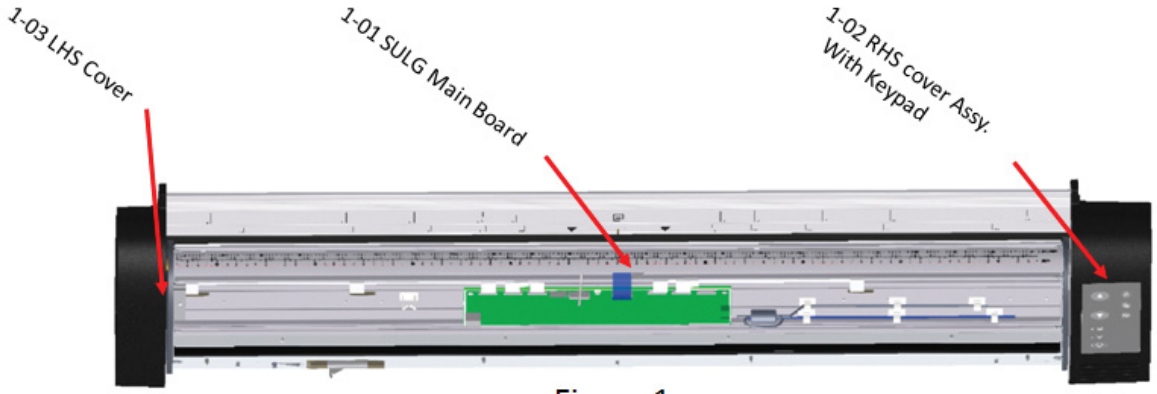
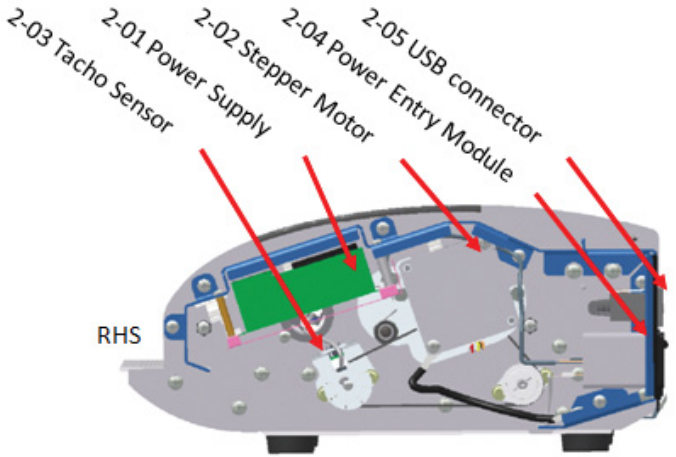


Figure 1.



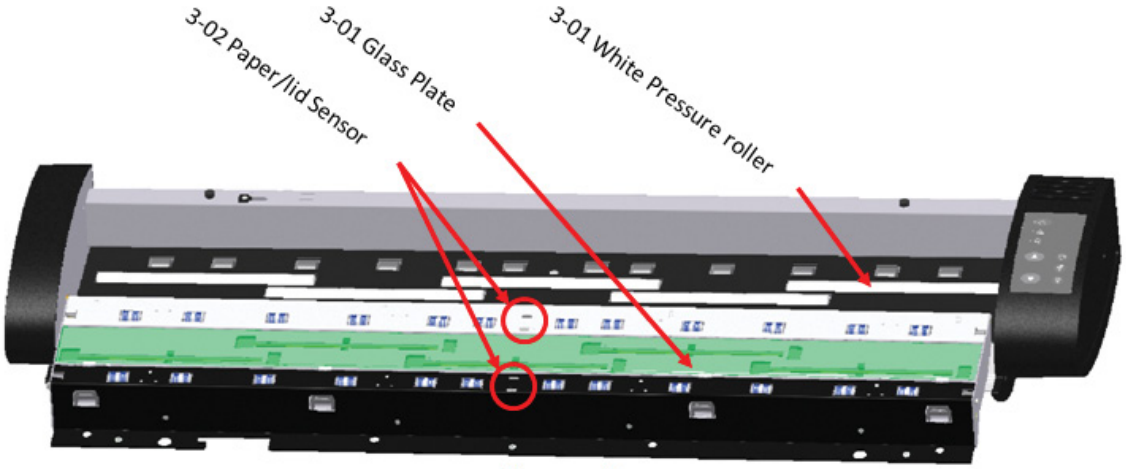


Figure 3.

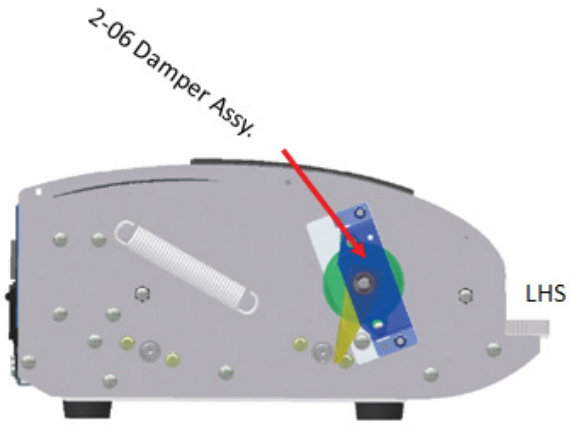


Figure 2.

Part list

Fig	Part no.	Description
Service parts		
1-01	5230d007RA1	SULG controller board
2-01	0080A074R01	Power Supply (SMPS)
2-02	5263D017R01	Stepper Motor Assy
2-03	0075A050R01	Tacho Sensor
3-02	0075A160R01	Paper/Lid Sensor (1 pcs.)
1-06	5398A002	Complete CIS Unit (excl. mainboard)
2-04	0007S050R0	Power Entry Module
2-05	0090B087R01	USB cable/connector
1-02	5302a001R01	RHS Cover Assy, Contex
2-06	5305M051R01	Damper Assy. for CIS Bridge
3-01	5299A031R03	Pressure Rollers (5 pcs.)
1-03	5302A002R01	LHS End Cover
N/A	0601A005R01	Castors (4 psc.)
N/A	5305A140R01	Basket Assy.
Consumables		
3-03	5229D071R01	Glass Plate
N/A	5399A101R01	Calibration Sheet

Power Supply (SMPS)

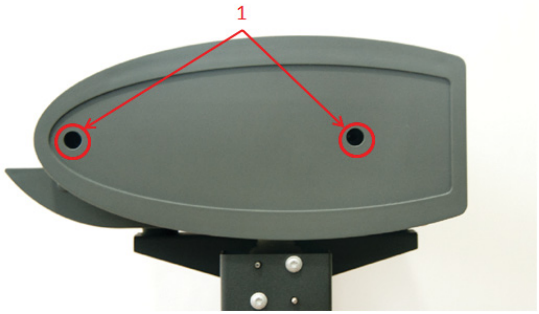
Prerequisites

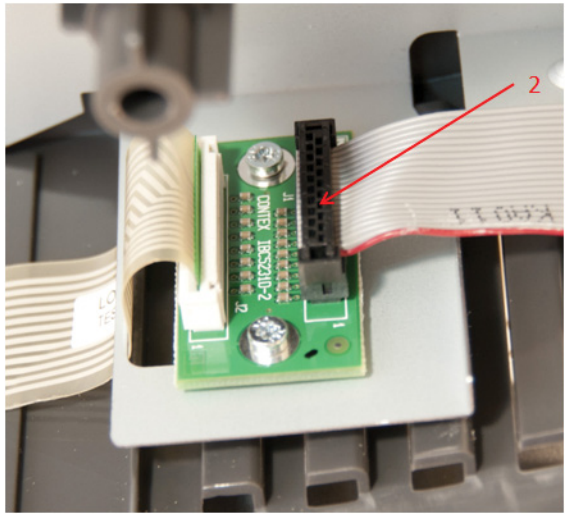
Turn the off scanner and disconnect the power cord

Caution

CAUTION THE POWER SUPPLY IS
DOUBLE POLE/NEUTRAL FUSING

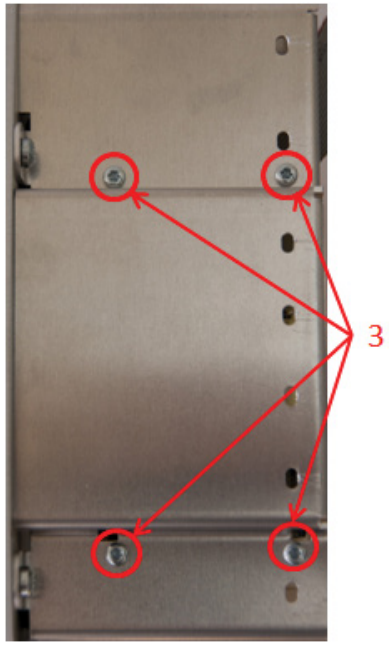
1. Remove Screws (Torx 20) and gently remove cover

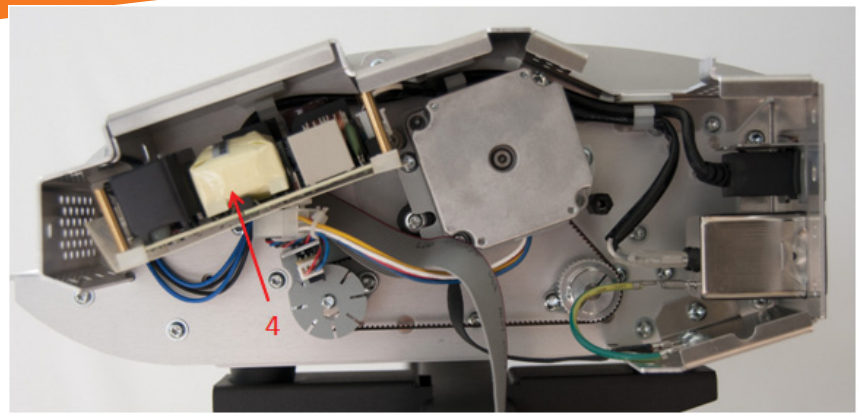




2. Disconnect ribbon cable for keypad

3. Remove screws (Torx 10)



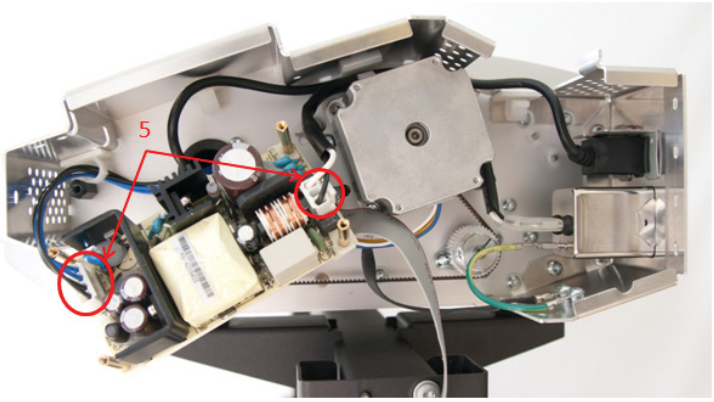


4

4. Lift out Power Supply

5

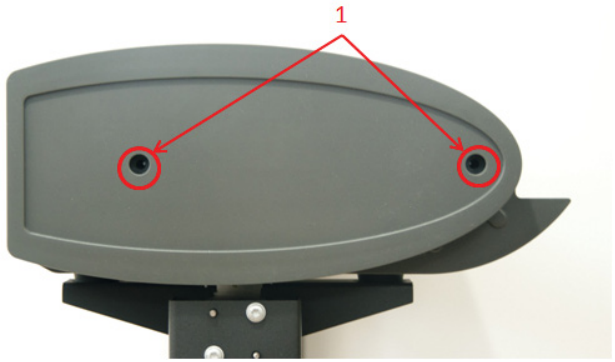
5. Disconnect cables (x2)



6

Replace the Power Supply Board and reverse the steps.

LHS Cover



1

1. Remove screws and Cover

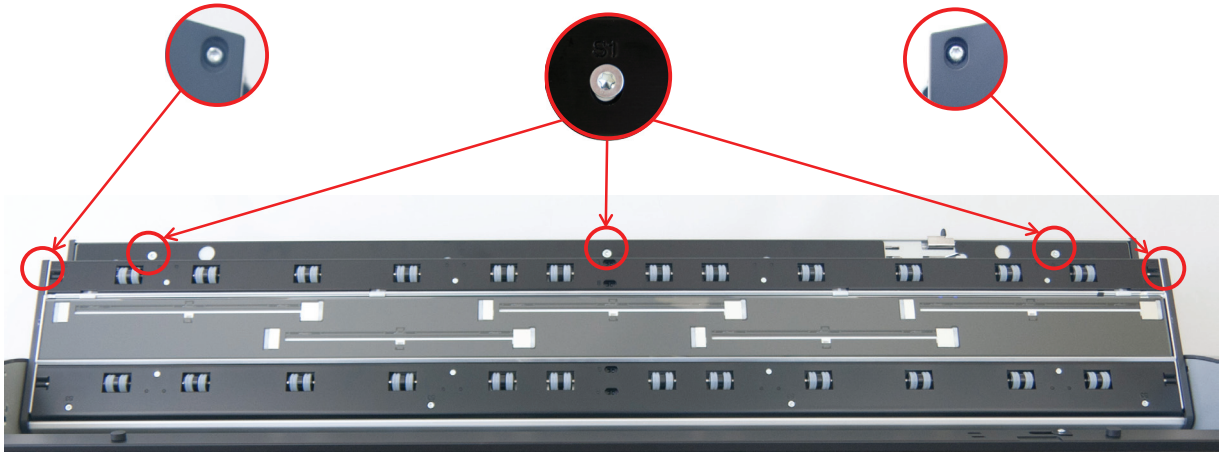
Scanner Controller Board (SULG)

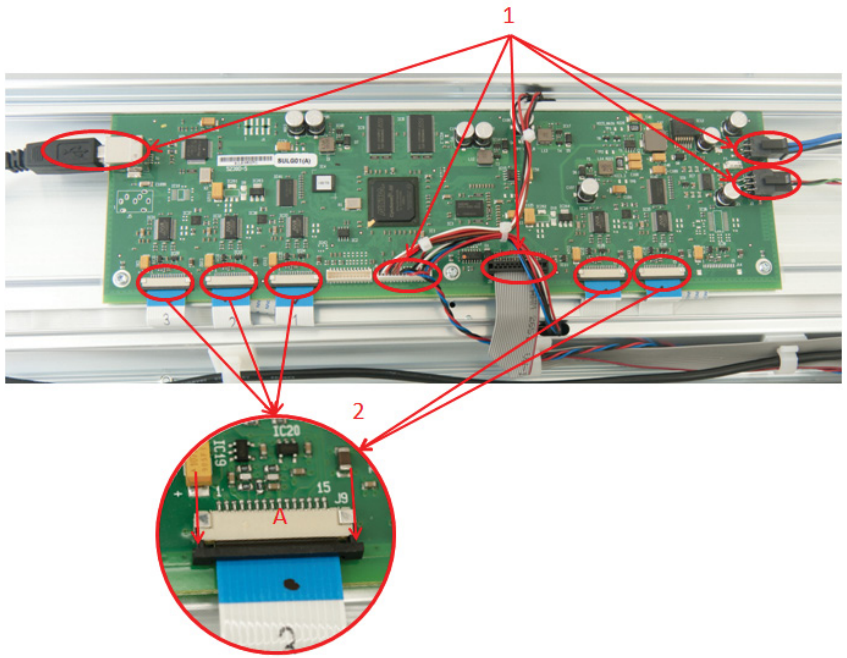
Prerequisites

Turn the off scanner and disconnect the power cord and tilt open the CIS bridge.

1. Remove screws marked S1 (Torx 10)
2. Open the CIS unit.

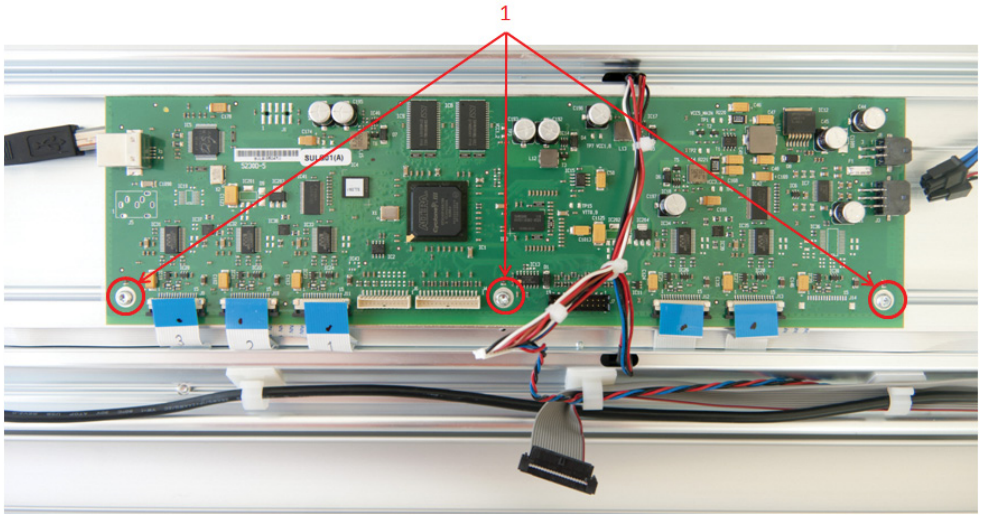
1





2

1. Disconnect cables
2. Release lock (A) on ribbon cables and pull out cable.



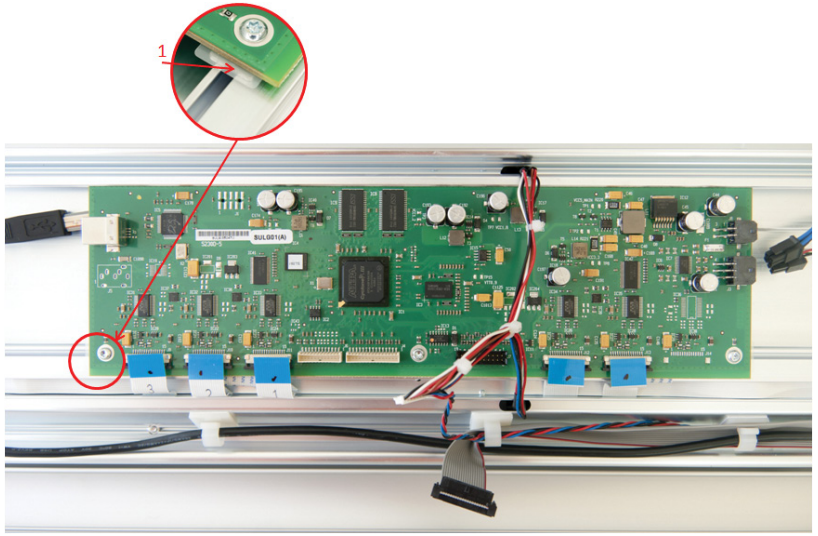
3

1. Remove Screws (Torx 10)

Replace the Scanner Controller Board and reverse the steps.

5

1. Make sure that the plastic insulation strip correctly is positioned correctly under the controller board.



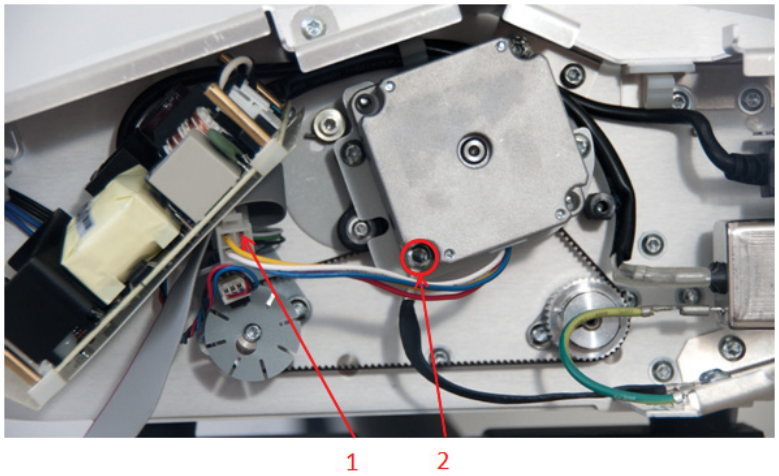
Post actions

Since the scanner have a new Controller board it will boot up as “Not Activated”. See Appendix E for further instructions on how to reactivate the scanner.

Stepper Motor Assy.

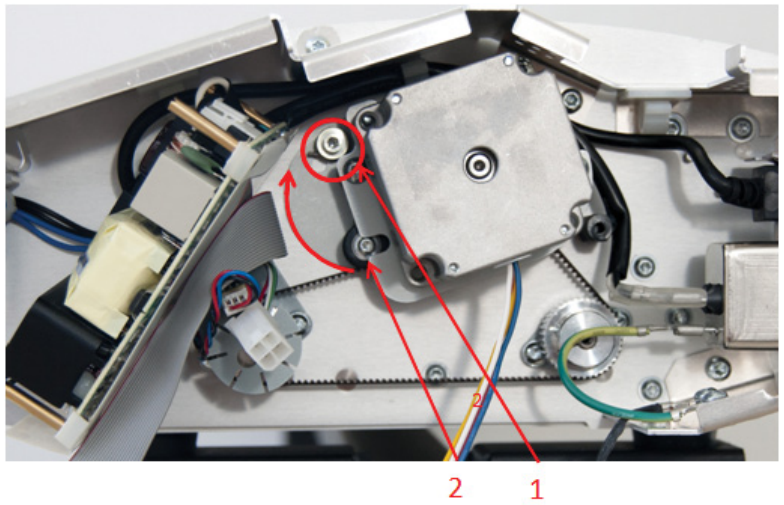
Prerequisites

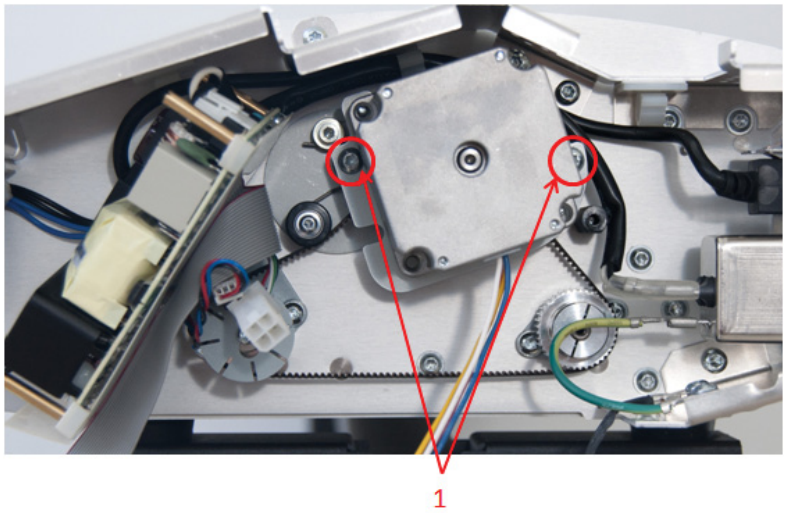
Turn the off scanner and disconnect the power cord and tilt open the CIS bridge.
Lift out Power Supply (do not remove completely)
see page 4-8



1
1. Disconnect Motor cable
2. Remove Screw and ground cable

2
Release Belt tension
1. Loosen screw (don't remove)
2. Push tension wheel upwards and tighten screw again

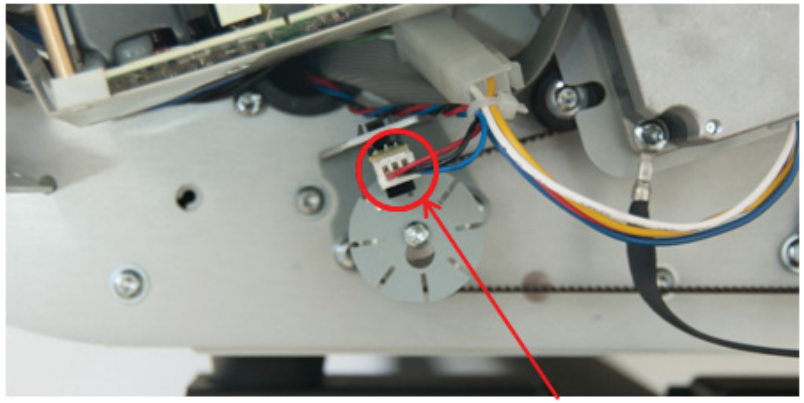




3
1. Remove screws and motor

4
Replace the Motor and reverse the steps.

Tacho Sensor



Prerequisites

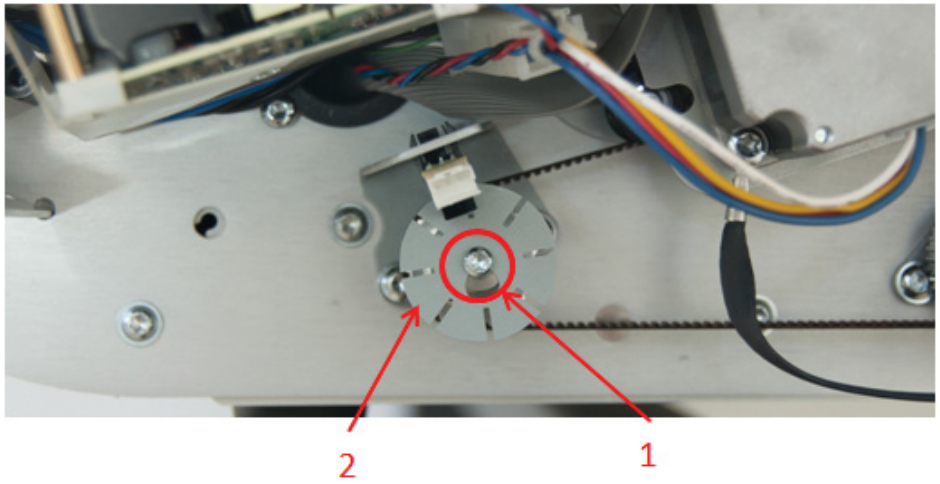
Turn the off scanner and disconnect the power cord and tilt open the CIS bridge.
Remove RHS cover, see page 4-8

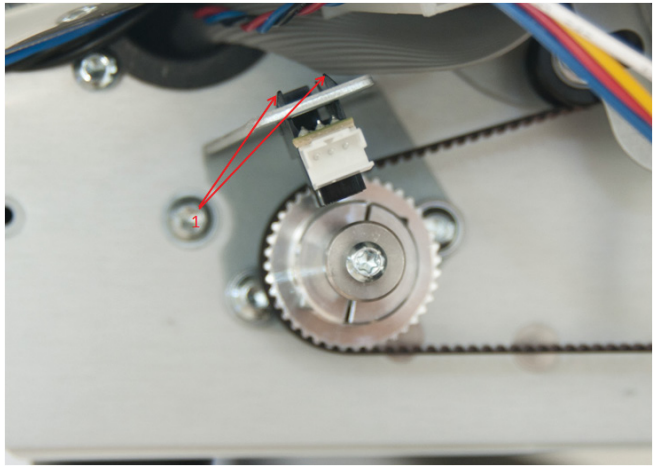
1

1. Disconnect Sensor cable

2

1. Loosen screw (don't remove)
2. Remove Tacho wheel





3

1. Release lock taps and remove sensor

4

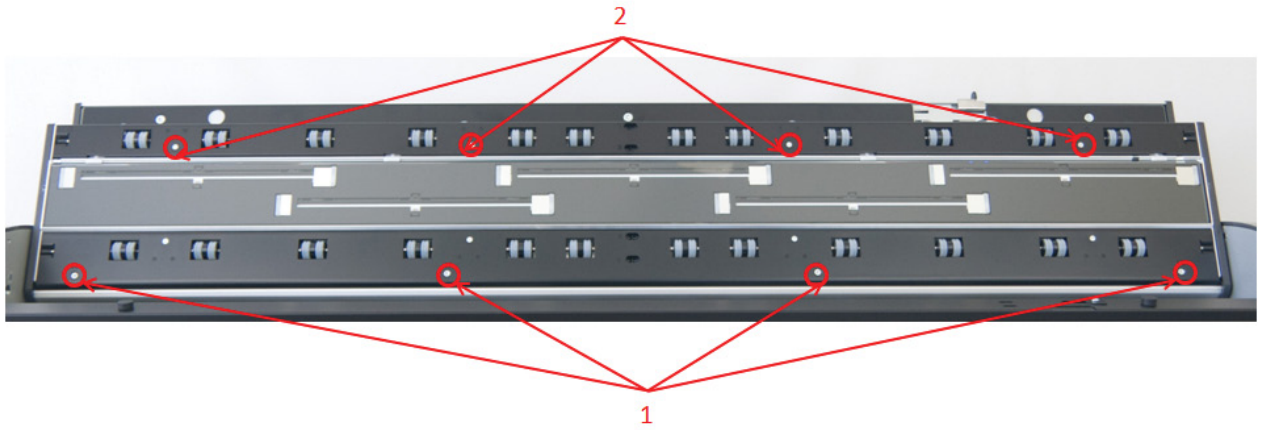
Replace the Sensor and reverse the steps.

Paper and Lid Sensors.

Prerequisites

Turn the off scanner and disconnect the power cord and tilt open the CIS bridge.

If replacing the Exit sensor or the Lid Sensor, you will need to open the CIS unit.
See page 4-10



1

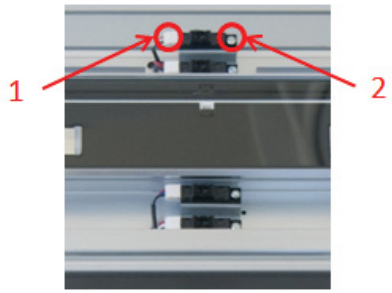
For Load and Paper sensor
1. Remove screws and roller cover

2

For Lid and Exit sensor
1. Open CIS unit see page 4-10
2. Remove screws and roller cover

3

1. Disconnect the Sensor cable
2. Remove the screw and Sensor



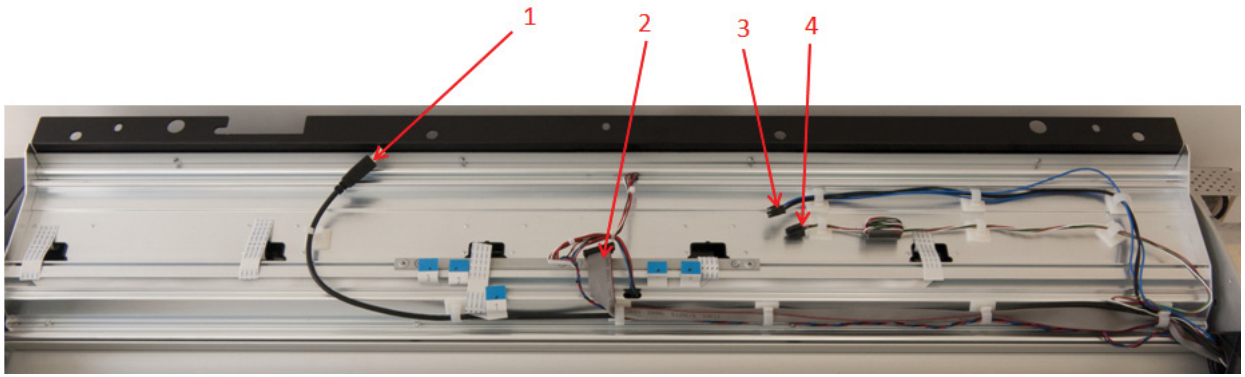
4

Replace the Sensor and reverse the steps.

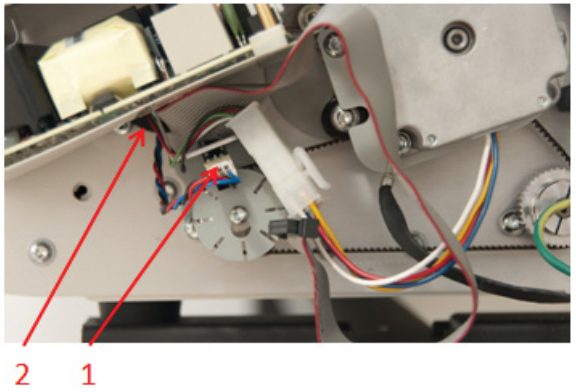
Complete CIS Unit

Prerequisites

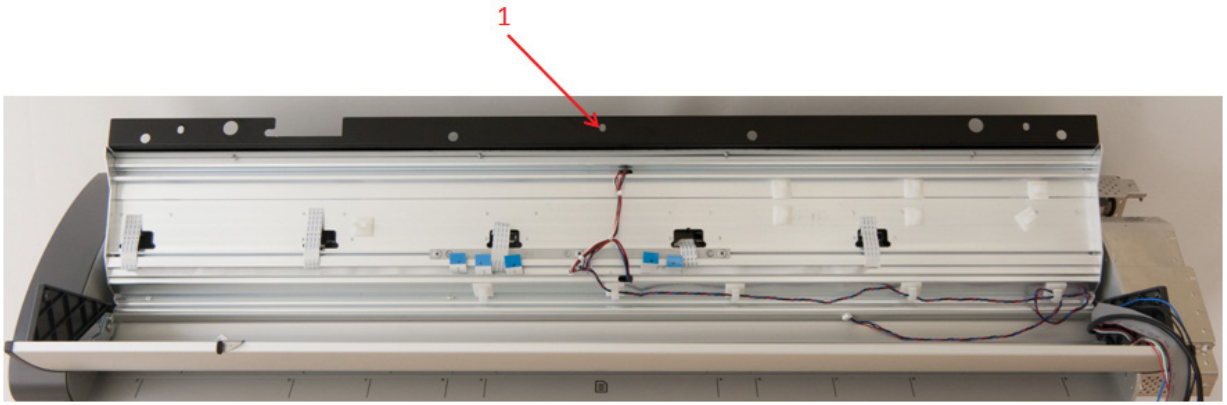
Turn the off scanner and disconnect the power cord and
Remove Scanner Controller Board, see page 4-10
Lift out Power Supply, see page 4-8



1. Un-clip the USB cable
2. Un-clip the Keypad cable
3. Un-clip the Power cable
4. Un-clip the Motor cable



1. Disconnect the Sensor cable
2. Guide the cable back into the CIS unit



1. Lift out CIS unit

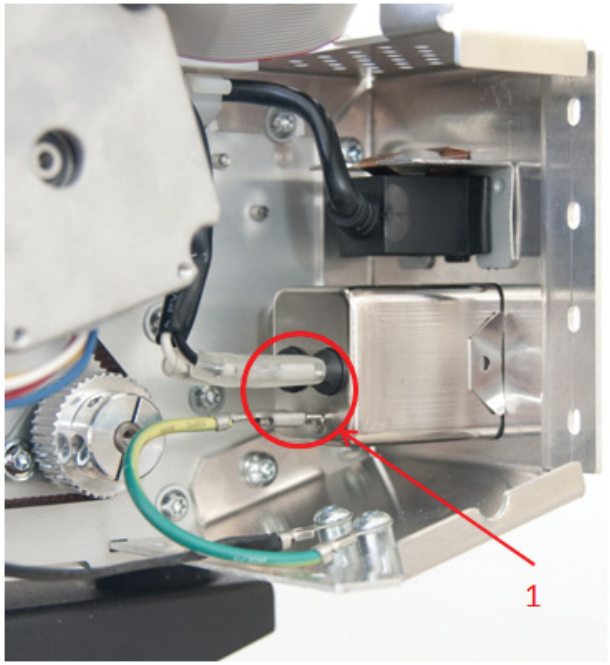
4

Replace the CIS unit and reverse the steps. Remember to Run a full Calibration on the scanner

Power Entry Module

Prerequisites

Turn the off scanner and disconnect the power cord
Remove RHS cover, see page 4-8

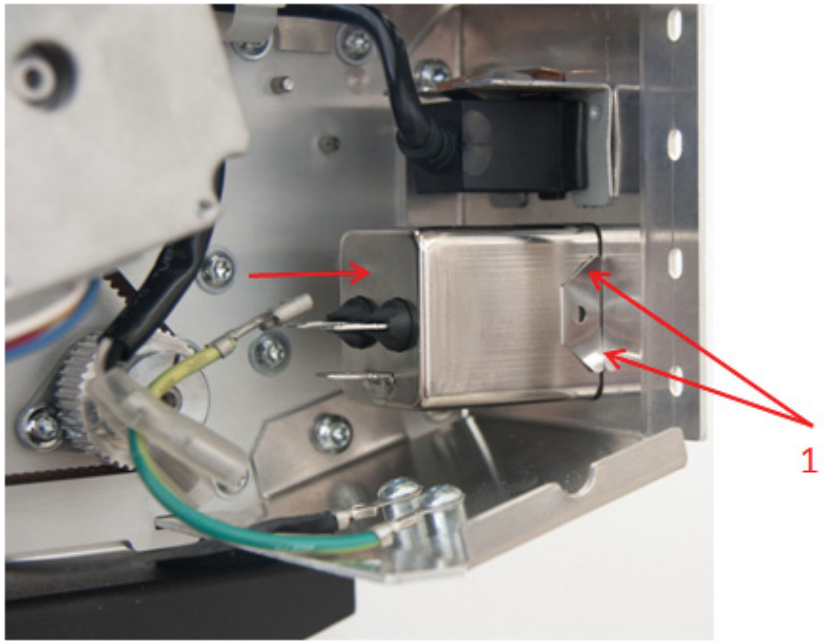


1

1. Remove cables

1. Push lock flaps in on both sides and push module out though the back

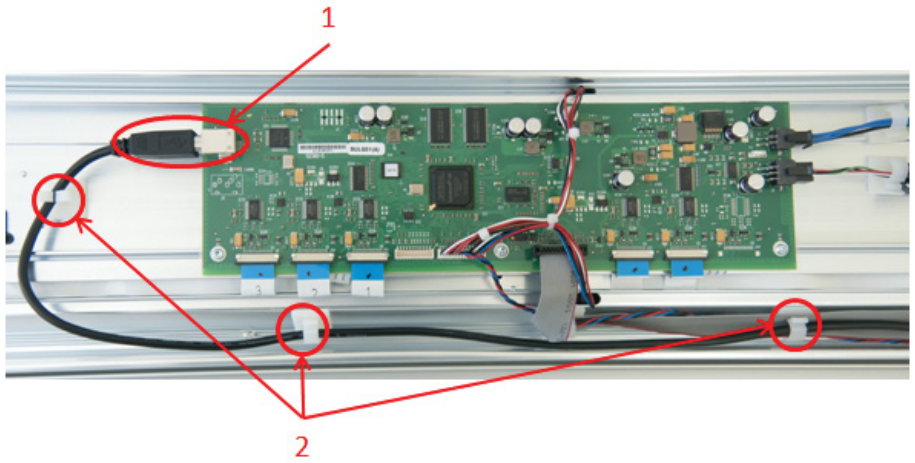
2



3

Replace the Power Entry Module and reverse the steps.

USB Cable



Prerequisites

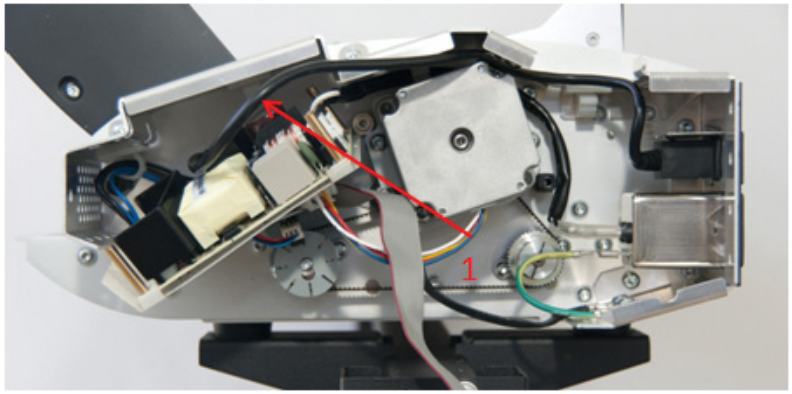
Turn the off scanner and disconnect the power cord
Open CIS Bridge Board, see page 4-10
Lift out Power Supply, see page 4-8

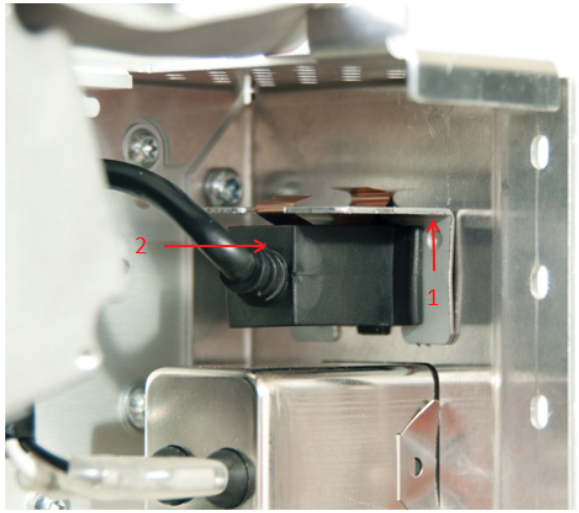
1

1. Disconnect USB cable
2. Un-clip cable throughout the CIS unit.

2

1. Un-clip the USB Cable and pull it gently out of the CIS bridge.





3

1. Remove clip by sliding it upward
2. Push USB connector and cable out though the back

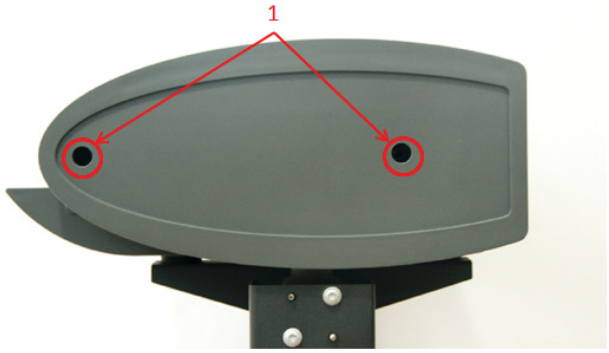
4

Replace the USB Cable and reverse the steps.

RHS Cover & Keypad

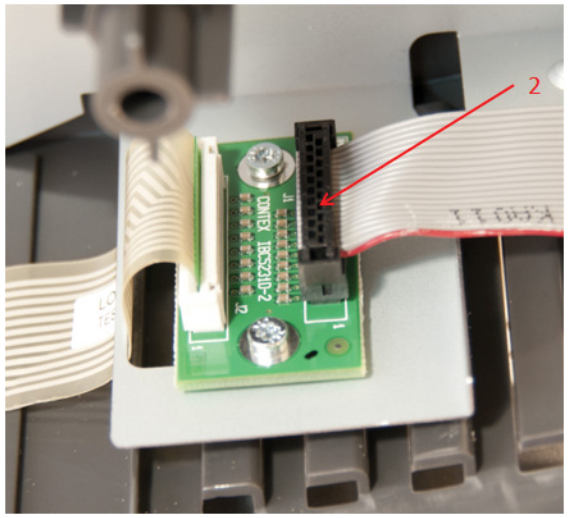
Prerequisites

Turn the off scanner and disconnect the power cord
Open CIS Unit, see page 4-10
Lift out the Power supply, see page 4-8



1

1. Remove Screws (Torx 20)
2. Gently remove cover

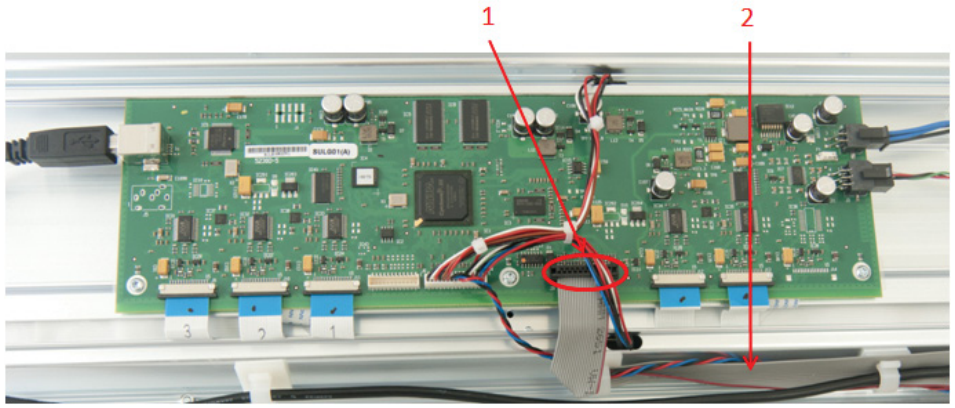


2

2. Disconnect ribbon cable for keypad

3

1. Unplug the Ribbon cable for the keypad
2. Pull the cable out though the side cover



4

Replace the Replace the RHS cover, keypad and ribbon cable and reverse the steps.

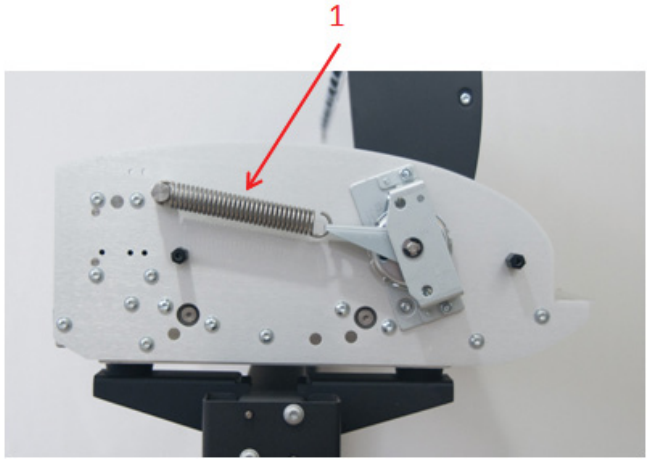
Damper for CIS Bridge

Prerequisites

Turn the off scanner and disconnect the power cord
Open CIS Unit, see page 4-10
Remove LHS Cover, see page 4-9

1. Remove Spring

1

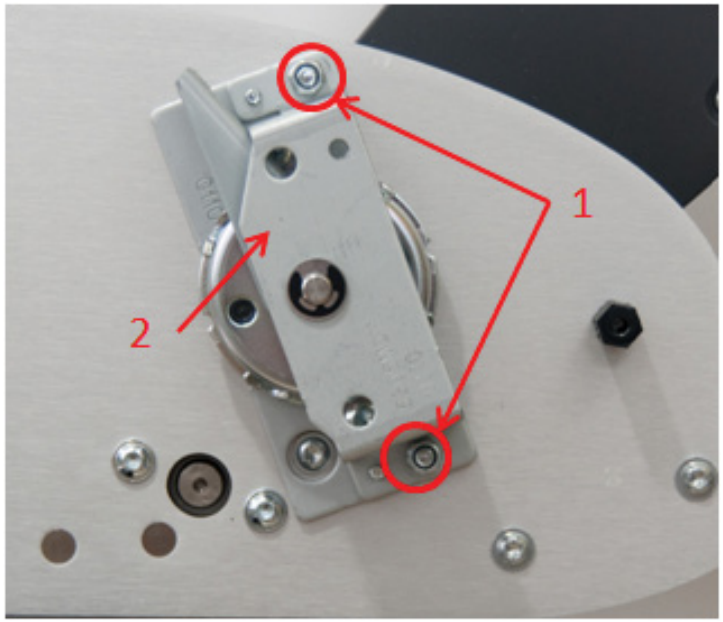


2

1. Loosen screws to release clamp.

1. Remove knots and pull out Damper Assy.

3



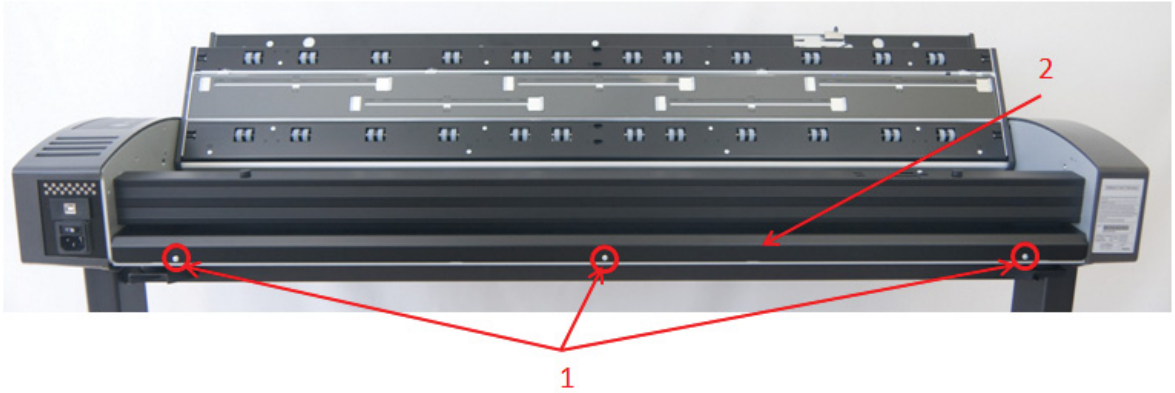
4

Replace the Damper Assy. and reverse the steps.
Don't forget to tighten the Clamp !

Pressure Rollers

Prerequisites

Turn the off scanner and disconnect the power cord and tilt open CIS bridge.

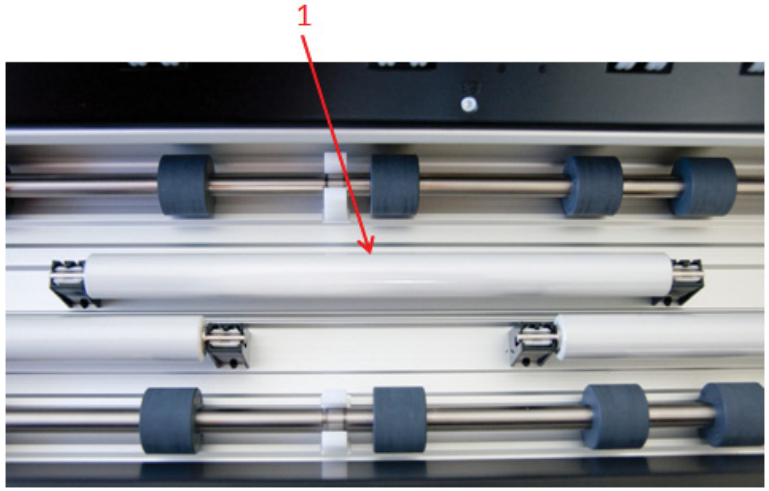


1

1. Remove Screws. (Torx 10)
2. Pull Roller Cover sheet out through the back

2

1. Gently pull the Pressure Roller out (repeat for all 5)



3

Replace the Pressure Rollers and reverse the steps.
Don’t forget to calibrate the scanner !

Appendix A
WIDEsystem / service

WIDEsystem Service, walk though

Since this chapter is not scanner specific, some of the illustrations may not apply completely to the scanner you are working on, like number of Cameras and transition areas.

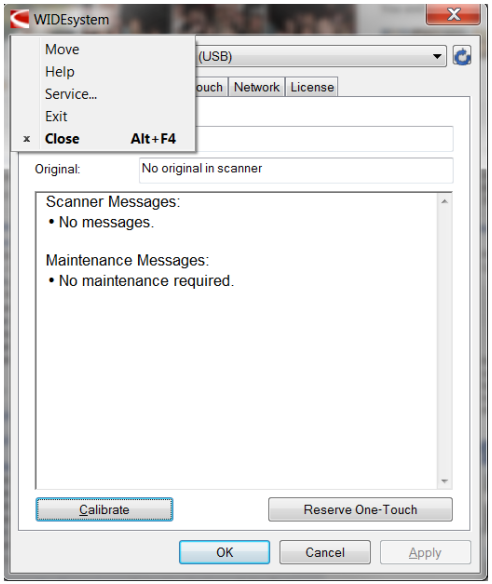
Widesystem / Service consist of 17 different tests designed to help you service the scanner. These test are divided on 5 different tabs according to what you are doing on the scanner.

Paper Path/Handling
Image Quality
Electrical
Utilities
Post Replacement

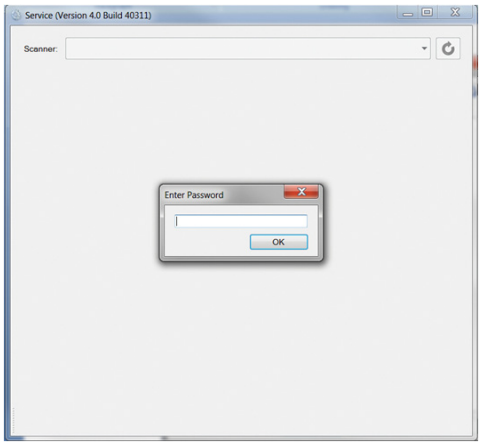
Some of the tests may appear on or more tab's. Each test is also associated with a number for easy reference.

No.	Name.	Tab.
1	Set Serial no.	(Post Replacement)
2	Operator Panel LED Test	(Electrical, Post Replacement)
5	Lamp On/Off	(Image Quality, Electrical, Post Replacement)
6	Motor Test	(Electrical, Post Replacement)
9	Oscilloscope View	(Image Quality, Post Replacement)
11	Manual Camera (alignment & Stitching)	(Image Quality)
12	Manual Scaling	(Image Quality, Post Replacement)
20	Streak / Noise Test	(Image Quality)
28	Adjust ATAC Sensors	(Paper Path/Handling, Post Replacement)
30	Calibrate ATAC	(Paper Path/Handling, Post Replacement)
31	Lamp and Fan Test	(Electrical, Post Replacement)
42	Backup Calibration and Statistics	(Utilities)
43	Restore Calibration and Statistics	(Utilities, Post Replacement)
44	License System	(Utilities, Post Replacement)
45	Operator Panel Key Test	(Electrical, Post Replacement)
46	Paper Sensor Test	(Paper Path/Handling, Post Replacement)

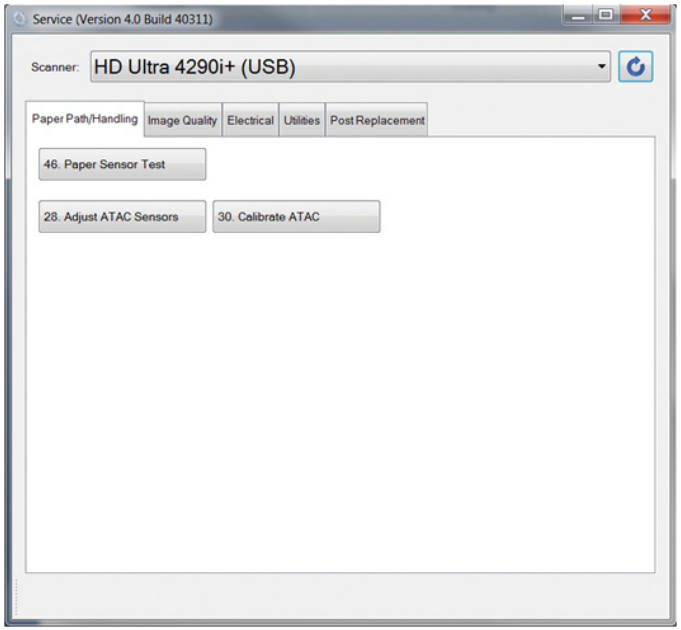
Getting access to the Service module in WIDEsystem is done by clicking on the logo in top left hand corner of WIDEsystem and selecting Service

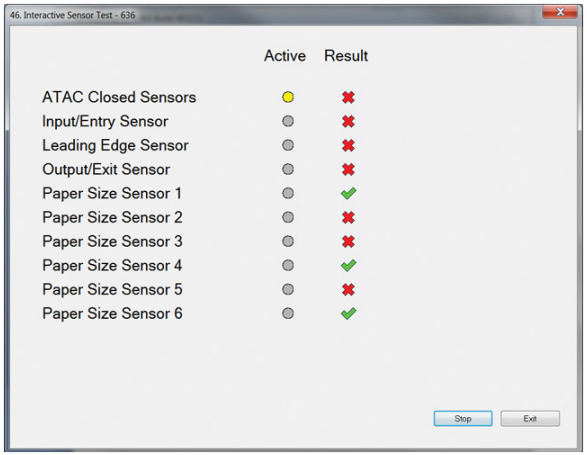


A password is required.



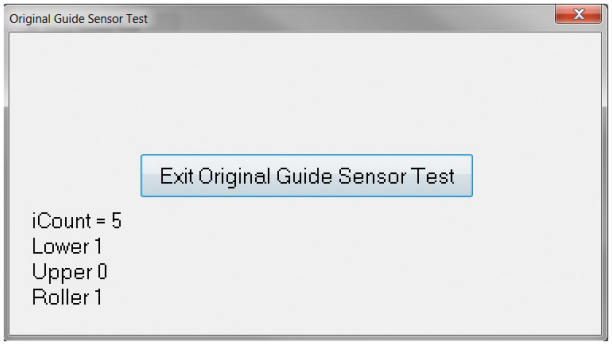
The service module default to the first tab, “Paper Path / Handling”.

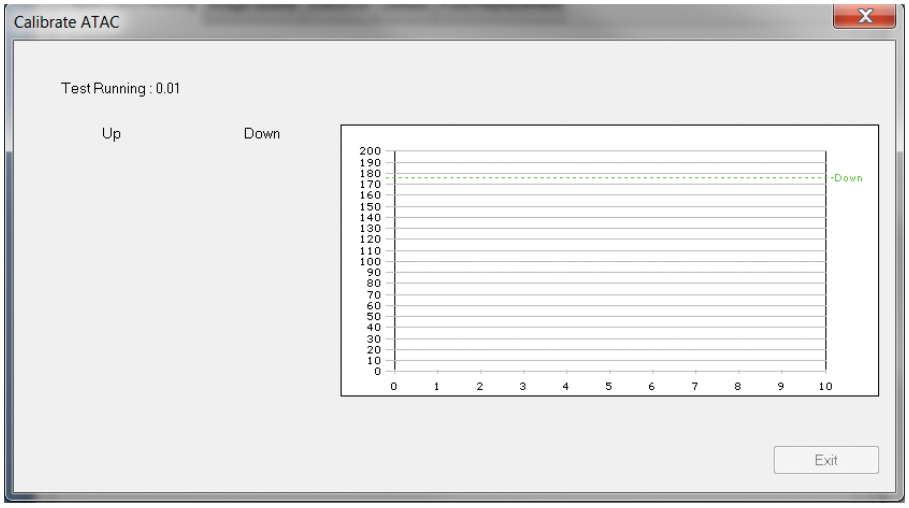




Test 46. Paper Sensor Test
Checking all the sensor's in the paper path.

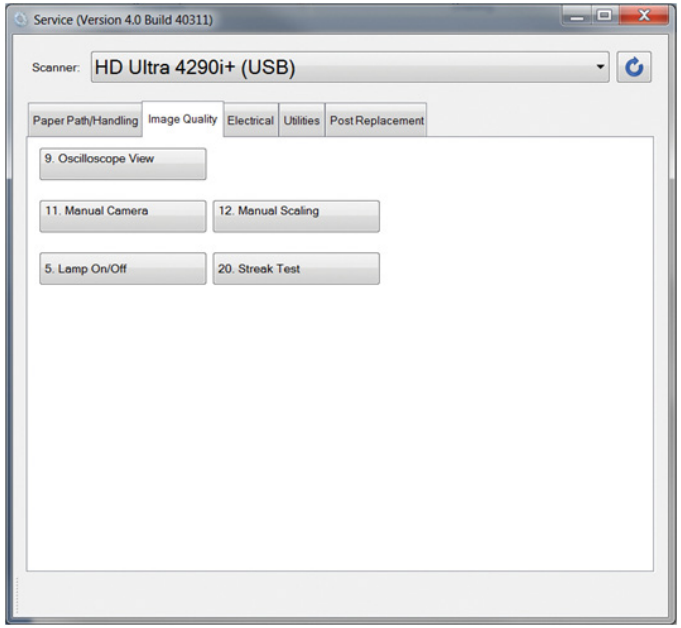
Test 28. Original Guide Sensor Test

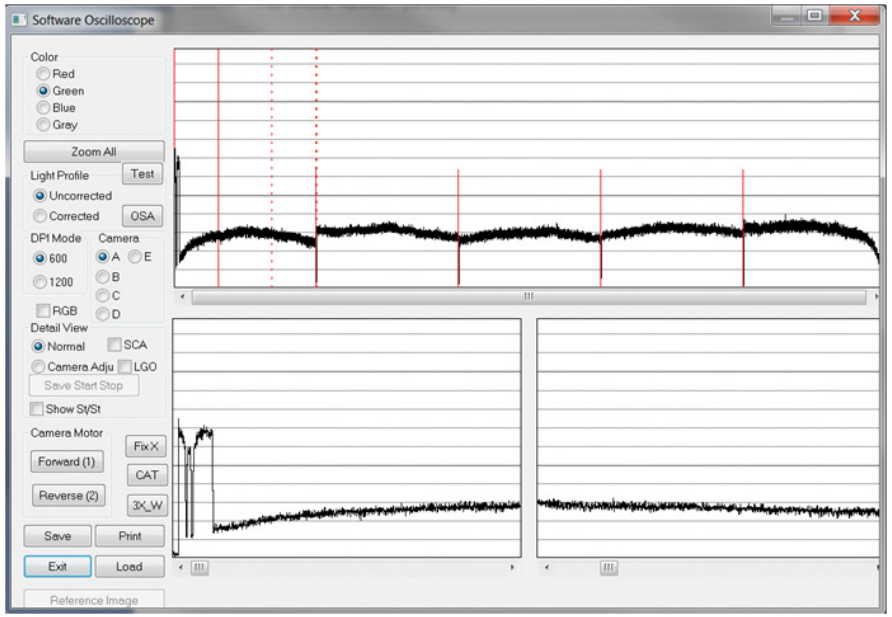




Test 30. Calibrate ATAC
The Guide plate will start to move up and down a couple of time to evaluate and calculate the correct current level.

Tab for test related to Image Quality





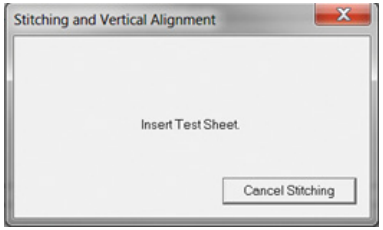
Test 9. Camera Adjustment
Provides you with a live image of what the CIS elements are looking at.

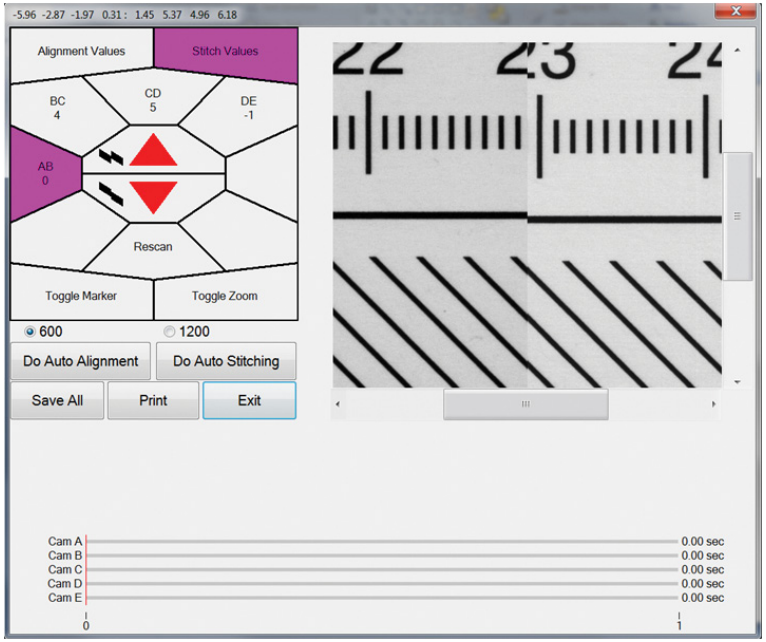
“Light Profile”
Uncorrected light profile shows the raw data from the CIS module.
Corrected light profile shows the calibrated data.

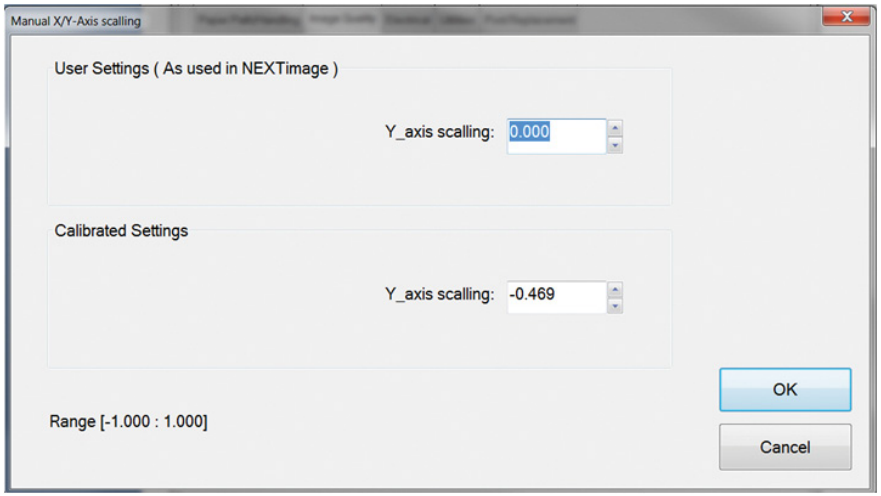
Test 11. Stitching & Vertical Align.

Allow you to adjust either Alignment or Stitching between 2 Camera's modules.

1) Select Alignment or Stitching
2) Select the transition area (AB, BC.....)
3) Use the arrows to either increase or decrease the value



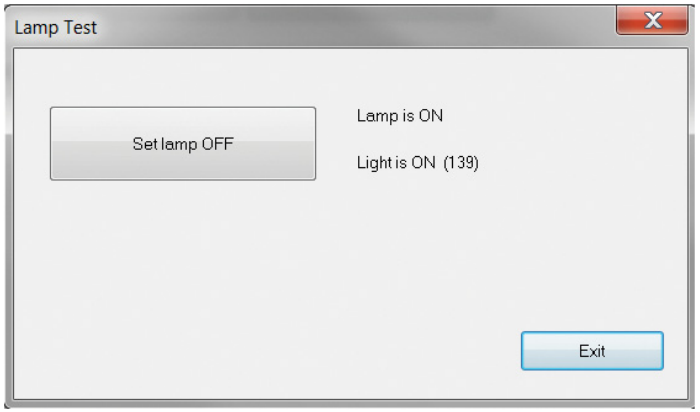


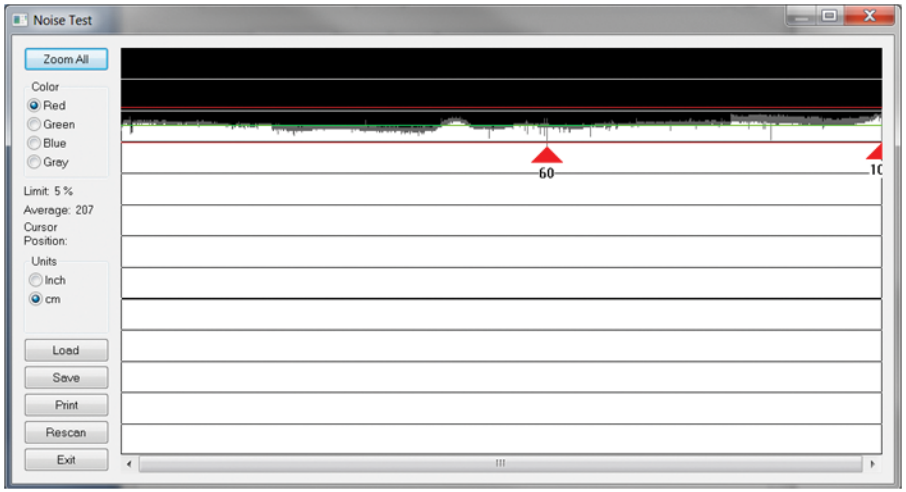


Test 12. Adjust Y-axis Scaling

Here can you adjust the X and Y scaling.
Scan a known size image measure in Nextimage, compare and adjust.
The correction is done in % of the deviation.

Test 5. Lamp on/off.
The control and the feedback of the Lamp can be checked,
The number in parentheses is an average gray tone level taken from camera A.



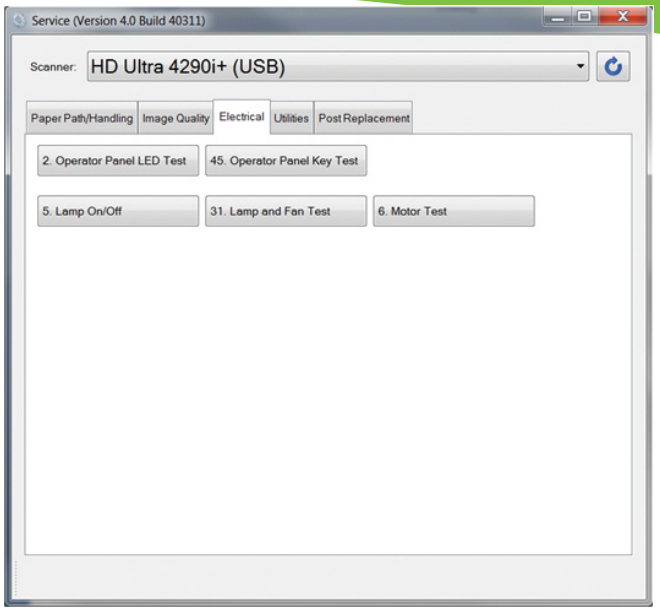


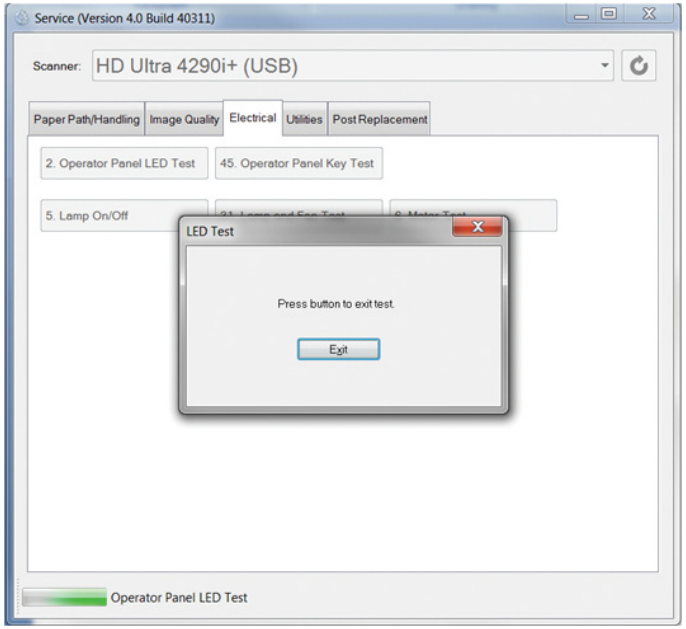
Test 20. Noise Test
This test is very useful if there are image quality issues such as streaks throughout the scan. (scan direction)

It can be determined if the streaks are: dust that are
1) present in the scanner (Dark streak that goes below the average line)
2) it has been present during Scanner Maintenance (White streak that goes above the average line)

Insert SM calibration sheet when asked.

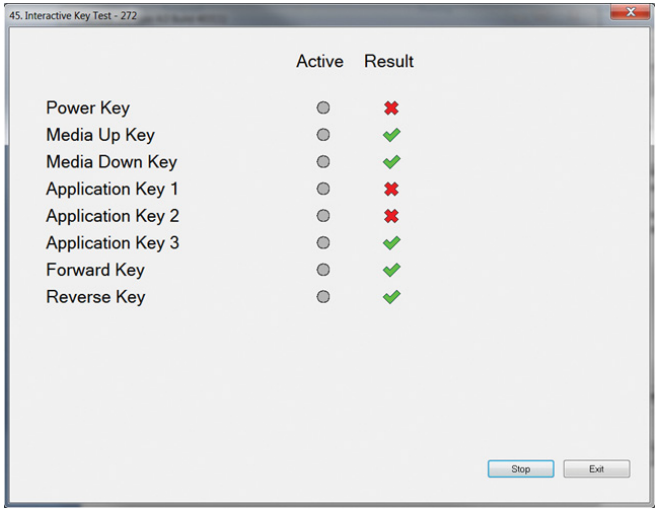
Tab for test related to Electrical components

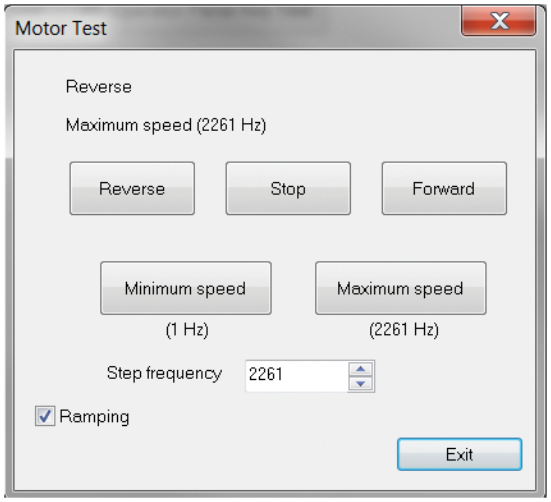




Test 2. LED Test
The LED's on the Operators panel will flash one at a time.

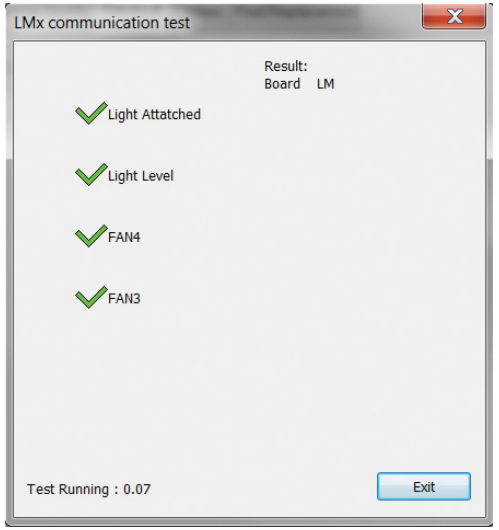
Test 45. Operator Panel Key Test
Each key will get a green check mark once they have been activated

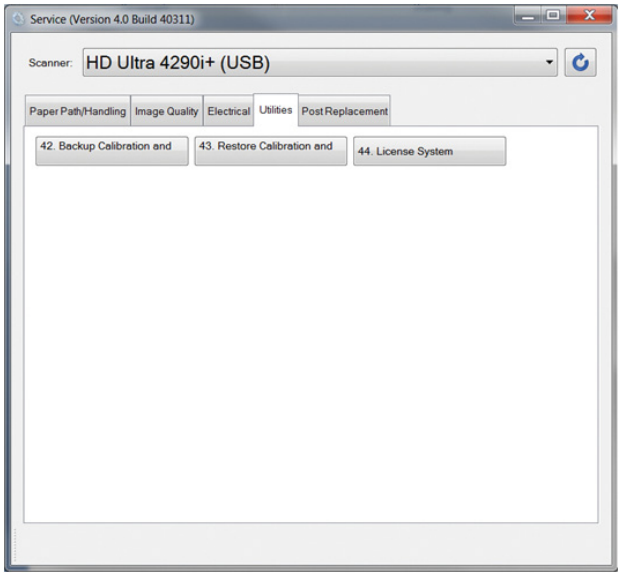




Test 6. Motor Test
The direction and the speed of the motor can be controlled

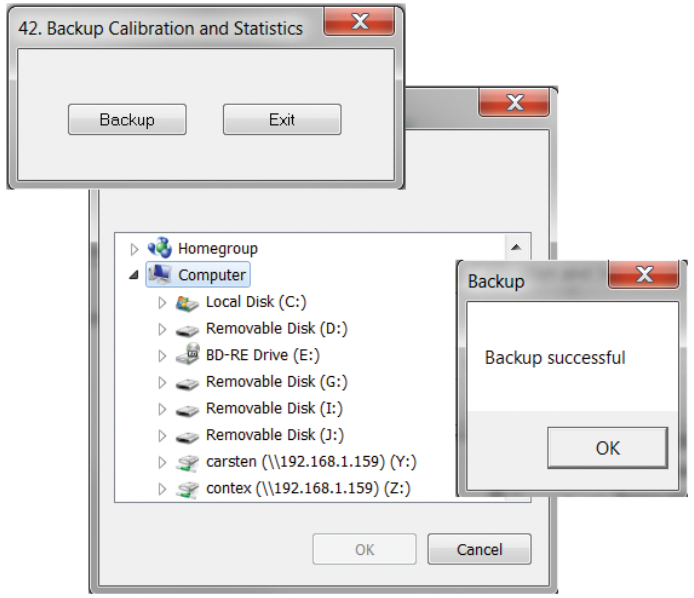
Test 31. Lamp and Fan Test
The status of the fan and the lamp Cartridge can be checked.

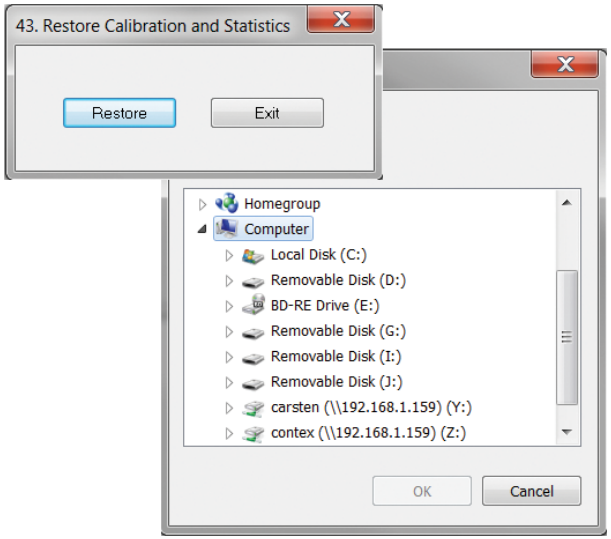




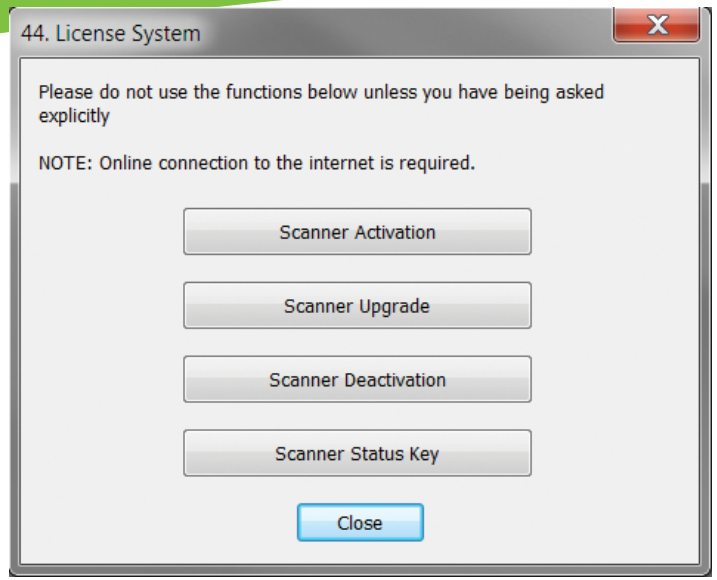
Tab for test related to Electrical components

Test 42. Backup Calibration and Statistics

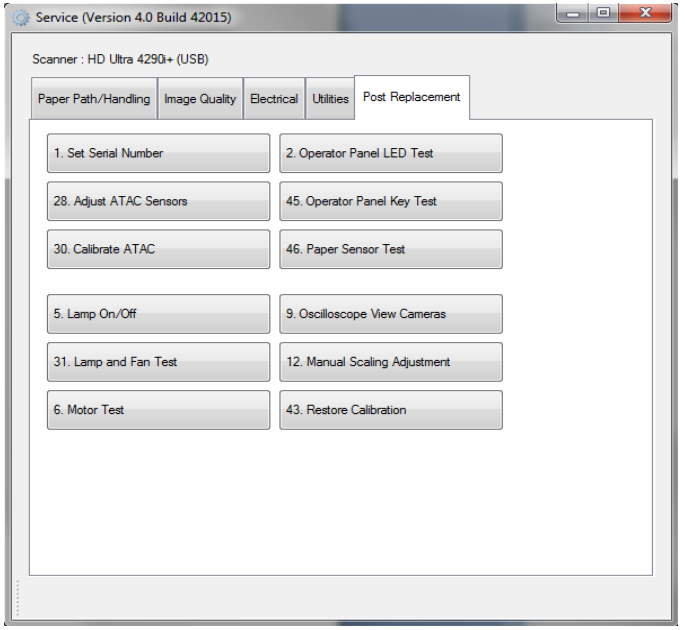




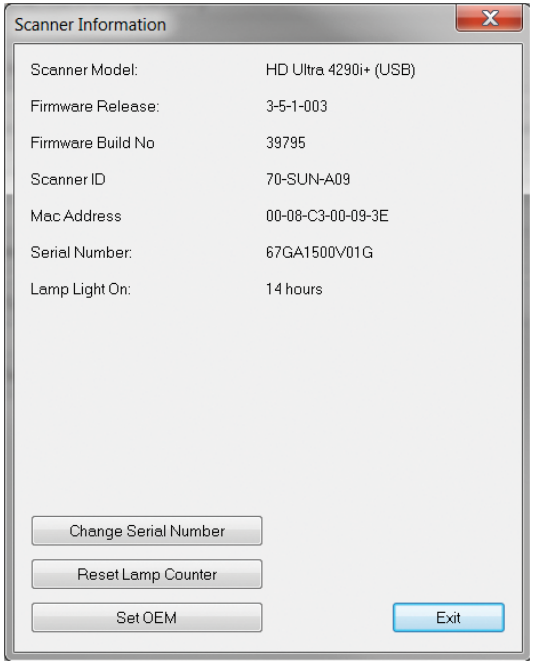
Test 43. Restore Calibration and Statistics


44. License System
Please do not use the functions below unless you have being asked explicitly
NOTE: Online connection to the internet is required.
Scanner Activation
Scanner Upgrade
Scanner Deactivation
Scanner Status Key
Close

Test 44. License System



Tab for test related to Part replacement



Test 1. Scanner Information

Appendix B
Firmware download

Firmware Download, walk through

The latest Firmware can be obtained from www.contex.com. Identify the scanner model and download.

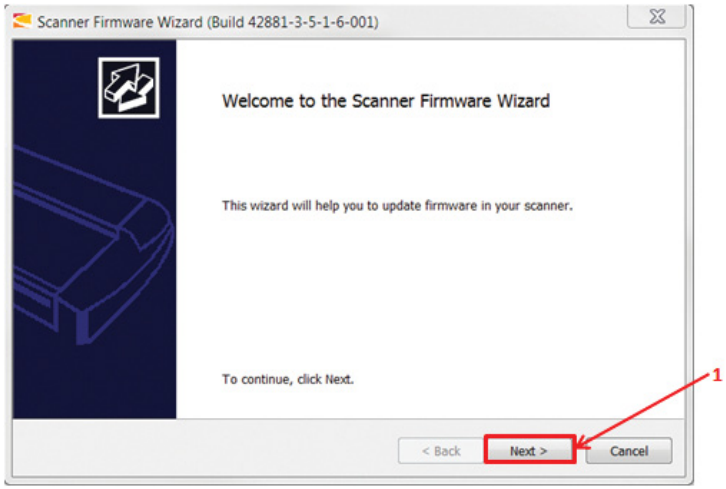
The computer that will be used for the firmware download needs to have WIDEsystem installed!

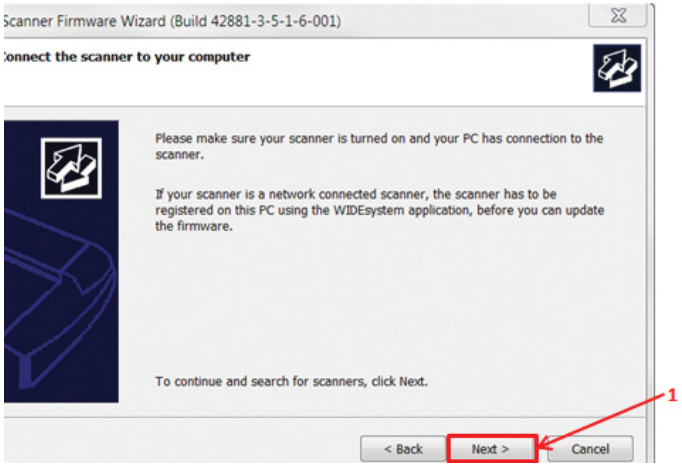
Name	Date modified	Type	Size
FW_ctx_3-0-1-005_b023109.exe	5/8/2008 3:48 AM	Application	1,758 KB

Example of firmware file
The name on the downloaded file will change according to the firmware version!

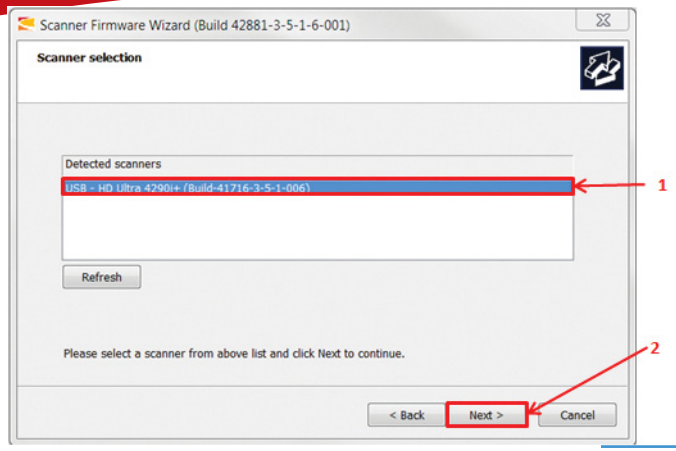
1 Execute the file.

2 Follow the instructions in the Scanner Firmware Wizard.


Scanner Firmware Wizard (Build 42881-3-5-1-6-001)
Welcome to the Scanner Firmware Wizard
This wizard will help you to update firmware in your scanner.
To continue, click Next.
< Back
Next >
Cancel
1


Scanner Firmware Wizard (Build 42881-3-5-1-6-001)
Connect the scanner to your computer
Please make sure your scanner is turned on and your PC has connection to the scanner.
If your scanner is a network connected scanner, the scanner has to be registered on this PC using the WIDEsystem application, before you can update the firmware.
To continue and search for scanners, click Next.
< Back
Next >
Cancel
1

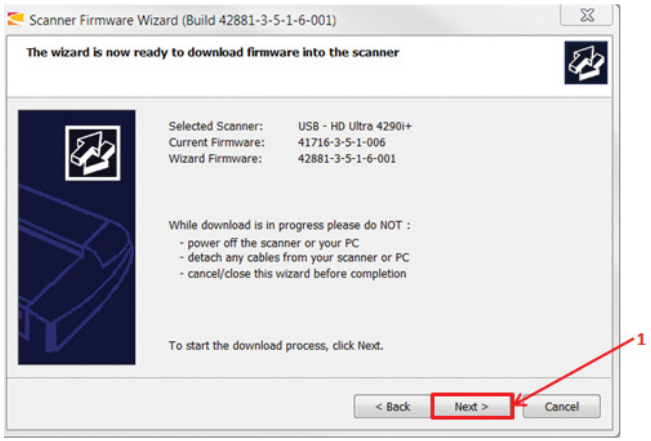
3 Do not turn power of to the scanner or the PC during Firmware upgrade process.

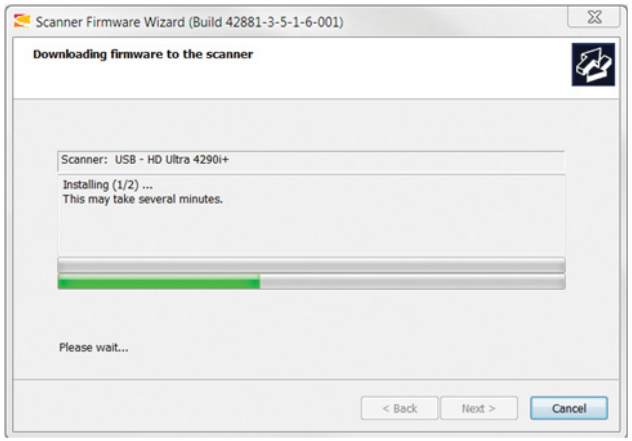


4. Select the scanner that you wish to upgrade and click next.

After validating the info, click next.

5

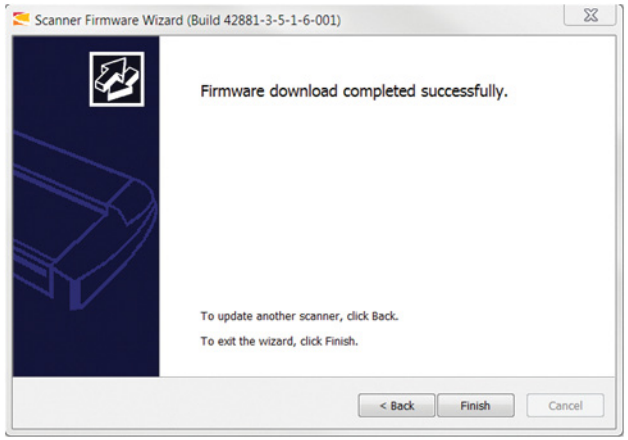

Scanner Firmware Wizard (Build 42881-3-5-1-6-001)
The wizard is now ready to download firmware into the scanner
Selected Scanner: USB - HD Ultra 4290i+
Current Firmware: 41716-3-5-1-006
Wizard Firmware: 42881-3-5-1-6-001
While download is in progress please do NOT :
- power off the scanner or your PC
- detach any cables from your scanner or PC
- cancel/close this wizard before completion
To start the download process, click Next.
1
< Back
Next >
Cancel



6 The Firmware program will now un-pack, download and activate the firm-ware in the scanner.

The scanners firmware has now been updated .
Don’t forget to calibrate the scanner.

7



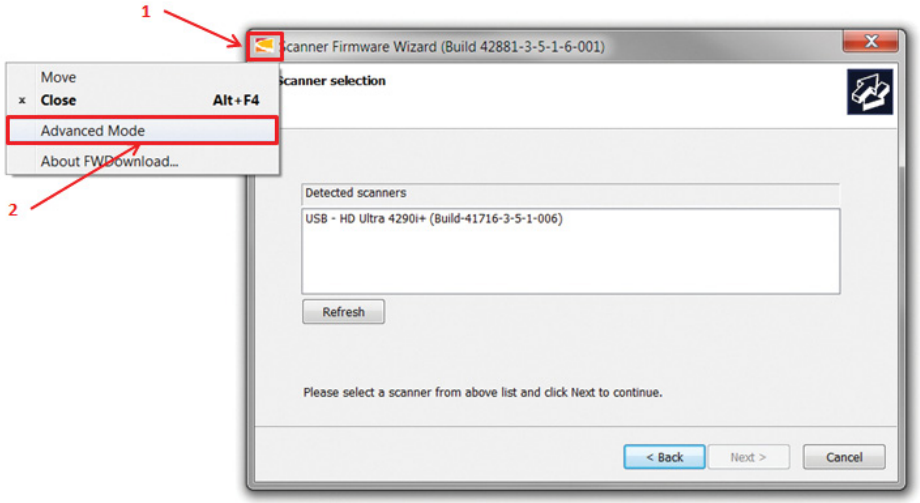
Erase Parameter block

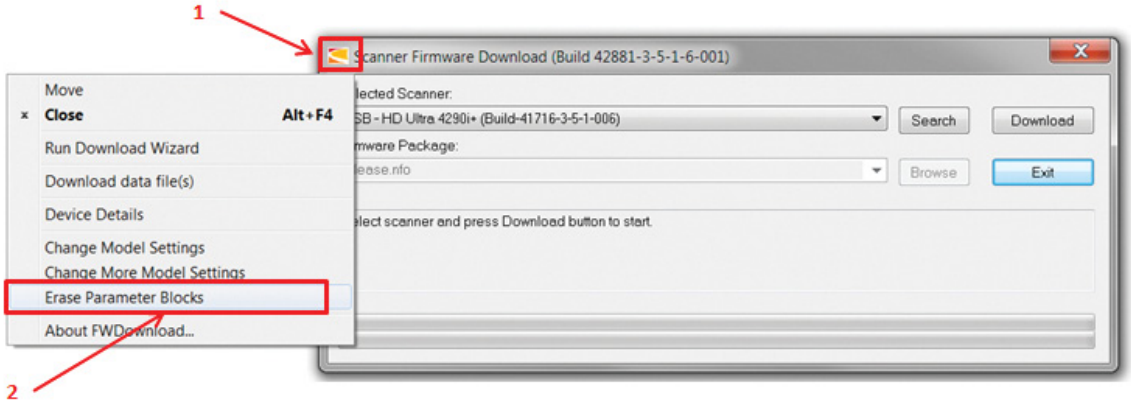
The Parameter block in the scanner can be erased through the Firmware program. Download the latest Firmware from www.contex.com. Identify the scanner model and download.
The computer used for the firmware download needs to have WIDEsystem installed!

Follow step 1 through 3 in upgrading firmware.

1. Click on the Contex icon.
2. Select Advance Mode

4





1. Click on the Contex icon.
2. Select Erase Parameter Blocks

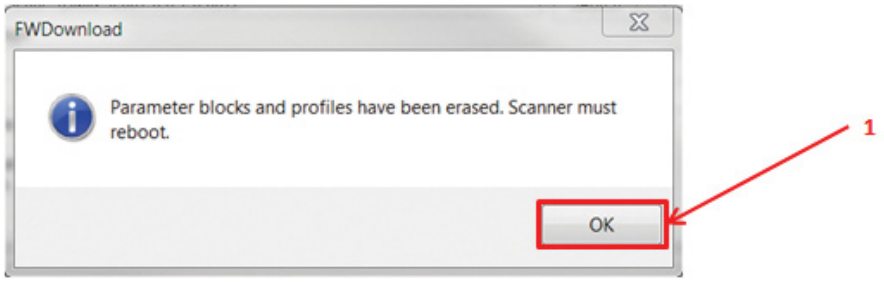
5.

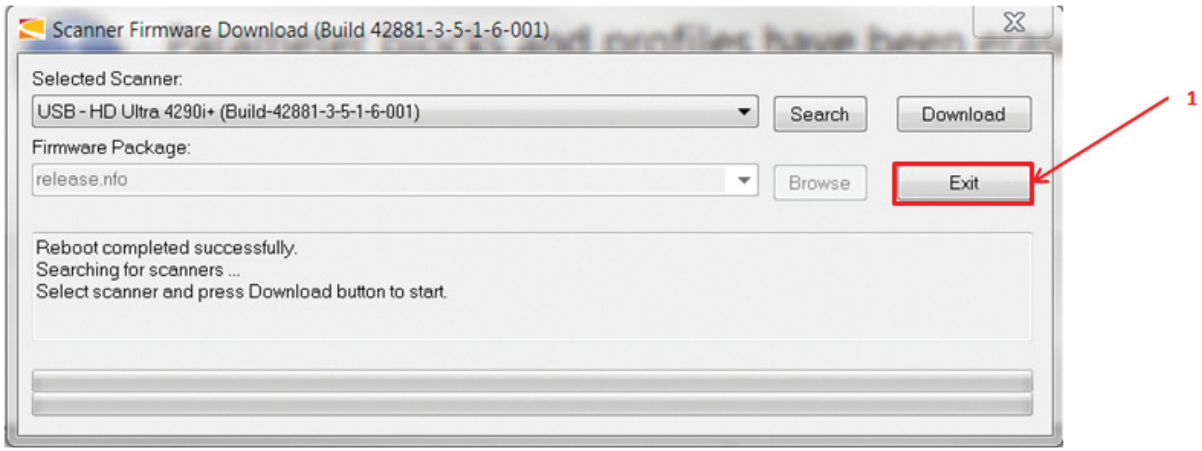
6. 1. Click YES to confirm that you want to Erase the Parameter Bock.

Only Data that can be restored by a Calibration will be Erased!

1. Click OK to let the scanner reboot.

7.





8. 1. Click on the Exit.

The scanner now needs to be calibrated.

Appendix C
Scanner Terms

Appendix - C --- Scanner Terms

Activation Code
Is the when the product specific License code has been pared with a Scanner serial no.

AdaptiveThresholding
Advanced 2-D Adaptive Thresholding estimates the background gray level in a window area around each pixel. The difference between the actual pixel value and the background is then compared to the adaptive settings to determine if a pixel is thresholded as a black or a white pixel

Additive Colors:
The additive primary colors are red, green and blue. These additive primaries represent the three main components of white light. Used individually or together, these three colors of light can be mixed to create nearly all colors. When these three primary colors are mixed in equal parts they produce white. Additive color is used in scanners and computer displays.

ADL+ Error Diffusion Halftoning
Image Processing that supports visibility of graytones in printed output by adding toned shades of gray in regions between black and white. Carried out as a segment of Dual 2D-Adaptive enhancement processing in copy modes.

ALE - Accuracy Lens Enhancement
Accuracy Lens Enhancement (ALE) is an electronic correction of spherical errors in CCD based camera- scanning systems.When looking at pixels across the range of a camera, the pixels tend to be more elliptical at the outside edges of the lens and more round in the middle of the lens. This anomaly is known as a spherical lens error and can introduce inaccuracies in the scanning system that can vary quite substantially between different points along the scan line. Most manufactures typically state a +-0.1% accuracy of the scanner between the two outermost end-points of the scan line. However, when measuring between two points that do not fall across the entire scan line, it is not unusual to see variations of up to +- 0.5% or even higher. This is naturally unacceptable in demanding environments and markets such as GIS, which need a stable and well-defined maximum error of 0.1% or less.
ALE solves this problem by a process to electronically correct the spherical errors in the scanner and maintain a stable maximum error across any two points of less than 0.05% ± 1 pixel.

ATAC
Automatic Thickness Adjustment Control - A special technology that allows the scanner pressure platen to be raised to accommodate thick originals and then lowered - both actions performed by pressing a key from the operators panel. Sensors in the platen detect when perfect pressure is applied to the the original and automatically stop the downwards motion of the platen so it rests on the original with an optimal grip.

Bitmap:
An image format made from a matrix of individual pixels. .bmp.

Bitmapped Image:
A bitmapped image is a computer file representing a line-art image that was scanned with a scanner. Refers to the pattern (map) of bits that are either black or white.

Black Level
The Black Level is a setting in scan programs used to change dark graytone colors to true black. For example, if one is copying a brochure with a mixture of text and pictures, the text will often be digitized to a color that we may see as black but really is a dark graytone. When the printer digests this graytone data, it will print the original's text with a halftone pattern, meaning scattered dots instead of solid black. By increasing the Black Level value, one can get the text to be copied in real black and it will therefore appear clearer.

Black Point Adjustment
An adjustment made that will determine the amount of shadow detail in an image. It is considered proper to set the black point so that the darkest part of an image will only just have zero detail.

Blueprint
A process of photographic printing used mainly for copying architectural and mechanical drawings; produces blue lines on a white/bluish background.

Blur
The averaging of pixel elements.

Brightness Adjustment
An adjustment on a scanner that allows the user to compensate for a light or dark original.

Calibration
Adjusting a device so that it performs in accordance with an established standard. Scanner calibration is minimizing color deviation between scanned ANSI IT8 reference color patches and the known color reference values. Generally, Calibration is the process of setting a device to known color conditions - stabilizing the device to a known and quantifiable state. Calibration is commonly done with devices that change color frequently, such as monitors (phosphors lose brightness over time), scanners (light changes) and printers (proofers and other digital printing devices can change output when colorant or paper stock is changed).

CALS
Computer-aided Acquisition and Logistics Support (CALS) standard, a U.S. Defense Department and industry initiative that addresses the design, manufacture, and support issues of generation, access, management, and use of technical data in digital form.

CCD
Charge Coupled Device, CCD is the image sensor in the scanner that converts light to voltages. These voltages are converted by the scanner into the image.

CCITT Group3
Standard runlength compression format used with FAX transmission. It utilizes modified Huffman coding to further compress the runlength numbers. Most scanner file formats are dialects of this format.

CCITT Group4
Two-dimensional compression format, giving very compact image files. Standardized by CALS (MIL 28002) and ISO-ODA for Drawing Archival and Interchange.

CIE LAB
A device-independent color space specified by CIE, used in modern color management software to facilitate conversion of data from a scanner to a display, or from a display to an output device.

CIE
Centre Internationale d'Eclairage (CIE) is an international organization that establishes methods for measuring color. These color standards for colorimetric measurements are internationally accepted specifications that define color values mathematically. The first color space model, the CIE xyz, was developed in 1931. CIE defines color as a combination of three axes: x, y,and z. The two color spaces released in 1978 are CIE Lab and CIE Luv. The goal was to provide an accurate and uniform reference of visual perception.

CMYK
The subtractive printing colors. Cyan, Magenta, Yellow, Black.

Color Balance
The visual effect of an image when the amount of each color and the overall amount of color are balanced.

Color bit depth
The simplest pixel has two options: black or white. (A pixel with two choices is known as a 1-bit image, or two raised to the power of one). Adding more bit information increases the number of color options. The number of potential color options for a pixel is called color bit depth. For example a 4-bit pixel would have 16 color options, and an 8-bit pixel would have 256 color options, while a 24-bit pixel would have 16,777,216 color options.

Color Cast
An image is said to have a color cast if its colors are not true. A color cast will usually be described by stating the particular color predominant in the image, e.g., the grass appears to have a red color cast.

Color Correction
To improve the color rendition. Correcting for, and eliminating an unwanted color cast.

Color Management System
Color Management System (CMS) software increases the accuracy of color interchange between scanners, displays and printers based on profiles for each device. The CMS is a layer of software resident on the computer that negotiates color reproduction between the application and color devices. The CMS performs the color transformations necessary to exchange accurate color between diverse devices. The Color manager needs access to characterization data for the device. The format and content of such device profiles is standardized by the International Color Consortium (ICC.)

Color Separation
Process of separating colors, in an image, into primary color components for printing. Converting an RGB color image into CMYK color image. Color separation is a technical function during which critical settings such as GCR, black ink limit and total ink limit are applied to the image.

Color Space
A color space is a particular language used to describe color. Examples of color spaces are: RGB, CMYK, HSV, CIE LAB.

Contrast
The difference between the lightest and darkest significant areas in a picture. A picture with high contrast has nearly white areas and nearly black areas with sharp changes in brightness between them. The picture seems dominated by stark light and dark tones.

Density units
Photographers and printers measure transmission in base-10 logarithmic density units, where transmission of unity corresponds to a density of 0, transmission of 0.1 corresponds to a density of 1, transmission of 0.01 corresponds to a density of 2, and so on

Density
The light stopping ability of a film. Density is inversely proportional to the amount of light reflected or transmitted by an image.

Device Dependent Color Space
For example RGB. A device dependent color space, e.g., the same scan file will appear different when viewed on different computer displays. For example CIE LAB. A device independent color space is one in which color values are absolute, e.g., defined by CIE standard. CIE LAB is the central color space in color management systems (CMS) and is used to translate between different device dependent color spaces such as scanner RGB and display RGB.

Appendix - C --- Scanner Terms

Device Profile
A file used as part of a Color Management System (CMS). A device profile contains information about the characteristics of a scanner, computer display or printer. The format for device profiles (Win95, Colorsync. etc.) is standardized by ICC (International Color Consortium).

DIP
Digital Image Processor. Hardware embedded function that does image enhancement in real-time while scanning.

Dither
To use patterns of different colored pixels to create blended colors; or, to use dots of different sizes to simulate grayscale images. (see below)

Dithering
A printing or display device may have only a small number of grayscale or color values for each device pixel. However, if the viewer is sufficiently distant from the printed page or display, the value of neighboring pixels can be set so that the viewer's eye integrates several pixels to achieve an apparent improvement in the number of levels or colors that can be reproduced.

Dots Per Inch (dpi)
A measure of dots in a square inch where the individual element is a round dot on the printed page.

DPI
Dots Per Inch, equivalent to Pixels Per Inch. An expression of resolution of a scanned image.

DSP
Digital Signal Processor, does image enhancement in real-time while scanning.

Dual 2D-Adaptive Enhancement
Enhancement processing on the foreground and background separately. Processing is performed on-the-fly. The separate enhancement processes are simultaneously performed on different drawing aspects.

Dynamic Range
A measurement of scanner quality; the density difference between highlights and shadows.

Edit
Modify an entry using standard Windows text-editing techniques.

Emulsion
The light sensitive silver, coated on the clear acetate film base, that forms the photograph when a picture is taken and the film is developed.

Equalizing
Distributing all color or tone equally along a density range.

File Format (image)
The format in which a scanned picture is saved. Many programs can insert or import a picture from a file, if it is saved in a file format that the program supports. Common file formats include TIFF (Tagged Image File Format), BMP (Windows bitmap), JPEG (Joint Photograph Expert Group), and FPX (FlashPix format).

Flip Horizontal
To flip the picture left/right.

Foreground
Foreground when scanning raster data (black and white, or monochrome data) refers to the pixels that represent data of interest (background refers to everything else). Typically, lines and shapes are represented by black pixels (foreground) and empty space is represented by white pixels (background). When scanning grayscale data, background means the gray level of a region of pixels that surrounds some desired foreground data.

Gamma Adjustment
An adjustment that makes the tone distribution lighter or darker in an image.

Gamut Transformation
Color Management System function, where out-of-gamut colors are converted to colors within the gamut of the targeted device, e.g., a printer.

Gamut
The color range scanable, printable or displayable by a device; e.g., if some of the displayable colors are outside of the gamut of the printer they cannot be printed.

GCR
Gray component replacement. A color separation setting used on color photographs where cyan, magenta and yellow inks are replaced by black ink (in a balance that would yield a gray value). The advantages are a reduction in overall ink usage and some increase in image detail.

Grayscale
A term for a black and white photographic image or a scanner setting. Refers to the range of 256 gray tones that make up the image.

Halftoning
The processes of offset printing and laser printing are intrinsically bilevel. However, these devices can reproduce a range of tone levels by halftoning; e.g., an array of widely spaced dots produces the perception of light gray, and an array of tightly spaced dots produces dark gray. Halftone dots are usually placed in a regular grid. In color printing it is conventional to use cyan, magenta, yellow and black grids that have exactly the same dot pitch but different carefully-chosen screen angles.

Hardware id
Is a uniqe id no for the scanner, based on the scanneres serial no and MAC address.

Highlights
The lightest part of a picture--reproduced as white on the screen or when printed.

Histogram
A bar graph representing the statistical distribution of Graytones or colors in an image. Each column represents the number of pixels at that gray level or color.

HLS
A color space with the three variables of Hue, Lightness, Saturation. See HSV.

HSV
A color space with the three variables of Hue, Saturation, Value. Hue means color (as in the color wheel.) Saturation is an indication relating to the richness or vibrancy of the color. Value is a term best related to the intensity of light illuminating the object.

Hue
A named color. In discussions of color that relate to photography, scanning, and printing, six hues are especially important: red, yellow, green, cyan, blue, and magenta. These hues make up every color we can see, and are the designated hues on color wheels.
Hue is also a measurement of color that can be related by pointing towards a certain color on the color wheel. Hue indicates the relative redness, blueness, greenness, yellowness, etc., of a color.

ICC
The International Color Consortium (ICC) was formed to address the need for a common color framework. The ICC has developed a standard device profile that contains information about how various devices render color. This concept is supported by Apple (Colorsync), Microsoft for Windows 95, Sun for Solaris, and by Silicon Graphics for Irix.

Image Editor
A program used to edit pictures to change colors, increase detail, scale or otherwise alter the picture.

Indexed color
Indexed color (or pseudo-color) is the provision of a relatively small number, say 256, of discrete colors in a colormap or palette. For each pixel in the image, the index number of a color is then stored. When retrieving the image, a lookup table uses the index to retrieve red, green and blue components that are then sent to the display. In graphic file formats such as PCX of TIFF, an indexed color image is accompanied by its colormap.

Interpolation
Using the interpolation method of resampling generates values for points in between the actual pixels by looking at the surrounding colors or intensities. In a scanner resolution is increased beyond the actual number of CCD cells. As each line of pixel data arrives from the cameras, new interpolated pixels are added between original pixels. The added pixels enhance line edge definition.

JPEG Compression
Joint Photographic Experts Group Compression. A method to save storage space by compressing files. JPEG achieves a high degree of compression by discarding non-important picture detail.

JPEG
A compressed file format for images. Named after the Joint Photographic Expert Group, JPEG images feature small file size and speed, but lower quality than other formats.

License Code
is the product/model specific code that the Customer recives with his Scanner (base model).

Loosless Compression
File compression and subsequent de-compression without any loss of data.

Lossy Compression
File compression that will compress data to a high degree. When subsequently un-compressed, data will have been lost.

LZW
Method of lossless compression used with many file formats; developed by Lempel, Zev and Welch.

Midtones
The most important part of a picture between black (shadows) and white (highlights).

Negative
A reversed photographic image used to produce a positive print or a scanned image.

NET - NET Architecture
NET Architecture is a solution for scanning across local networks.
What does it do?
- Enables Sharing a scanner on a network.
- Enables scanning to a Designated Scan Folder on another computer.

NET Architecture allows a a scanner to scan to a client PC in a single coherent and secure process. The client does not need to expose or share his local hard disk as the system can be set up for authorized transfer to the client.
Example of usage - a company that needs to create digital documents of its drawing archive, can send the drawings to a service bureau that scans all the documents directly to the client (company) file server allowing immediate feedback from the client and prevents digital distribution of confidential documents outside the client company.
NET Architecture also allows users in a company to use a scanner, from their own PC workstations although the scanner is physically placed elsewhere. It only need to be on the same LAN. In this way a single scanner is “shared” throughout the company.

Noise
A term used to describe the occurrence of pixels that contain random colors within an image.

Original
The paper, negative, slide, or film to be scanned.

Palette
The set of colors available for an image.

PICT
A file format for pictures used primarily on the Macintosh.

Pixels Per Inch (ppi)
A measurement of resolution for scanners, where the individual element is a square picture element (pixel).

Pixels
The word pixel is a combination of the two words picture and element. It is the smallest building block within a scanned line-art or photographic image. A pixel is the small square picture element that is filled with a color, black or white. The value of a pixel depends on the luminance of the area, and is either a single bit for a black and white image, or multi-bit for a color or gray-tone image. Pixels come in various sizes and their size is expressed in terms of resolution. Resolution is measured in pixels per inch (ppi) or the equivalent dots per inch (DPI.)

PostScript
A computer language developed by Adobe (R) Systems, Inc. for printing text, graphics, and scanned images. PostScript (R) is a vector format that can include scanned bitmapped images.

Raster File
Also called Raster Image or Bitmapped Image. A picture composed of individual dots (picture elements, pixels) the way a scanner perceives it. The rows in a high-resolution raster file typically contain 200 or 300 dots per horizontal inch of the original drawing, and there are typically 200 or 300 rows per vertical inch. As each of these dots is defined by location, and by whether it is on or off, raster images generally result in large data files.

Resolution of a Scanner
Expressed as DPI (dots per inch) or the equivalent ppi (pixels per inch). The higher the resolution of a scanner, the smoother the scanned images.

Resolution
A measure of how many pixels per inch are scanned. Generally, more pixels per inch means more detail in the picture and a larger file when saved. Defines the level of detail that can be captured or shown by a scanner, display, or output device. For scanners, the resolution is defined by the number of dots (pixels) per inch (DPI) that can be captured horizontally and vertically, e.g. 300 DPI equals 90,000 pixels per square inch. Screen Resolutions are normally 72 pixels per inch of screen. Additional detail is thrown away by the screen display driver, anyway. For Printer Resolution scans, you need 150 dots per inch and above for good results on the printed output. One must find the level of detail that is still visible in printed output on the printer in question, and not dramatically increase the size of a saved file without bettering the result.

RGB
Red, Green, Blue. These additive primary colors are the basic elements of white light. By mixing them on a computer monitor or in a scanned image file, other colors can be created. For instance, Red and Green produces Yellow, and equal amounts of all three produce gray.

RIP
Raster Image Processor. A RIP is a special software that converts scanned images into a color dithered (halftone) image that can be output directly. An image must be 'ripped' before it can be output on a CMYK device, e.g., an inkjet printer.

Rotate
To turn the picture left (clockwise) or right (counterclockwise) from the orientation in which it was scanned.

Runlength Encoding
A method of compressing raster or bitmap data by representing "runs" of white or black dots along a scanned line as the number of dots in each run. Many variations of this scheme exist, with varying compression efficiency. Typically, runlength compression formats yield a file 20-25% the size of an uncompressed file.

Saturation
The level of colorfulness of the picture. A picture with high saturation has vivid color. A black and white picture has zero saturation. The purity of a color or the degree to which it is diluted with white light. Red is a highly saturated color. Pink is a diluted red (has lower saturation).
Saturation is one attribute of color in the color space called HSV (Hue Saturation, Value). Saturation is a characteristic indicating the vibrancy or intensity of a hue. A color with high saturation will appear more intense than the same color with less.

Scale
To reduce or enlarge the size of a picture proportionally.

Scanner Calibration
A program that helps adjust the scanner to achieve stable colors and work with a printer. Calibration gives better scanning results. The program should be run whenever changing printing equipment, toner, and inks, and whenever getting poor results when printing pictures.

Screen Calibration
A program that helps adjust the computer screen to get the best display of scanned pictures and documents. This program is run during installation and should be used again any time that the computer screen or the lighting around the computer is changed.

SCSI (Small Computer System Interface)
An interface that allows hard disks and other high-performance peripherals to be attached to Macintosh and PC computer systems.

SCSI Card
The printed circuit card that came with the scanner. With its driver software, the card allows the computer to talk to the scanner. The card is ASPI compatible with a SCSI-II output connector.

SCSI
Small Computer System Interface. Specification of interface to computer equipment like disks, printers, scanners etc.

Shadow Detail
The amount of detail contained in the dark parts of an image. It is desirable to maintain shadow detail, but there is a risk of decreasing overall contrast if one lightens the shadow too much in an attempt to expose additional detail. If an image is scanned without shadow detail, it will be impossible to regain detail using an image editing program.

Shadow
The darkest part of a picture; reproduced as black onscreen or when printed.

Sharpness
An attribute of a scanned image and also an attribute of scanner quality.

SRGB
Hewlett-Packard and Microsoft proposed the addition of support for a standard color space, sRGB, within the Microsoft operating systems, HP products, the Internet, and all other interested vendors. The aim of this color space is to complement the current color management strategies by enabling a third method of handling color in the operating systems, device drivers and the Internet that utilizes a simple and robust device independent color definition. This is to provide good quality and backward compatibility with minimum transmission and system overhead. Based on a calibrated colorimetric RGB color space well suited to Cathode Ray Tube (CRT) monitors, television, scanners, digital cameras, and printing systems, such a space can be supported with minimum cost to software and hardware vendors.

Stitching
In large format multiple CCD camera scanners, electronic stitching adjusts for overlap in the field of view of adjacent cameras. Automatic stitching at start of scan ensures that each camera captures the correct number of pixels independently of mechanical and thermal changes.

Subtractive Colors
The subtractive primary colors: cyan, magenta, yellow. As ink applied to a piece of paper by a printer, these colors absorb light and alter the colors seen by looking at the printed paper. Cyan ink absorbs the red third of the spectrum, magenta ink absorbs the green third, and yellow ink absorbs the blue third. This should theoretically cause the viewer to see a black color, but due to unavoidable impurities in the inks, there is still light reflected and the viewer sees a muddy brown. The absence of CMY pigments results in white.

TIFF
Tagged Image File Format. One of the most common graphic file formats for line-art and photographic images.

Tonal Distribution
Tonal Distribution describes the distribution of various bright or dark tones within an image. During the scanning or image editing stage, tones can be redistributed, lightening a dark image or darkening a light one.

Tone Compression
A term used in scanning and image editing that refers to compressing the broad range of tones and colors in an image down to the narrower range available on a printer.

Tone Curves
The shape of the tone transfer curves can be adjusted by the user to alter color or tone correction. The lower left end of the curve typically represents the dark portions of a picture and an upward bend will typically lighten the shadows. Similar capabilities exist by working with the middle or highlight parts of the curve. In this way it is possible to alter only certain tonal ranges of an image without making un-wanted changes to other parts of the image.

Tone
Any color or neutral that is denser than white.

True color
True color systems provide eight bits for each of the three components (red, green and blue). Therefore true color is often referred to as 24-bit color.

TWAIN
A standard method of communications that programs can use to send instructions to hardware (such as scanners) and receive data back from them (such as pictures).

UCR
Under Color Removal. A color separation setting used on color photographs where cyan, magenta and yellow inks are removed from dark, neutral areas and substituted by black ink. The advantages are a reduction in overall ink usage. See also GCR.

Vector Drawing
Also called Vector File. Consists of mathematically defined elements, such as “Line from A to B”, “Circle with center and radius”, etc. CAD systems use vector drawings because of their accuracy, relatively low memory requirement and data-file sizes compared to raster images.

Vector File
Also called Vector Drawing. Consists of mathematically defined elements such as: Line from A to B, Circle with center and radius etc. CAD systems use vector drawings because of their accuracy and relatively low memory and data file sizes compared to raster images.

Vectorization
Also called raster-to-vector conversion (RTV). The process of automatically converting a raster (bit-mapped) image into a vector (CAD) drawing.

White Level
White Level is a setting in scan programs used if one has an original with a background that is not completely white. To get the background to appear as pure white one can set the White Level to a lower value.

White Point Adjustment
An adjustment made that will determine the amount of highlight detail in an image. The white point should be set so that the lightest part of an image will only just have zero detail

XYZ
The CIE system is based on the description of color as a brightness (luminance) component Y (as described above), and two additional components X and Z. The spectral weighting curves of X and Z have been standardized by the CIE, based on statistics from experiments involving human observers. XYZ tri-stimulus values can describe any color.

Zoom
The ability to enlarge or shrink the view of the picture in a window. Zoom does not alter the size of the final scanned picture; it only provides a better view while creating a selection border on the screen.

Appendix D
Error codes

Error Codes

Software related errors

System Error: **262-51**
Description: Error closing file, corrupted image
Corrective Action.

- Image size and resolution exceeds file format limitations. Reduce resolution or image size

System Error: **55-101**
Description: No scanner found.
Corrective Action.

- Check that the scanner is properly connected and turned on.
- Reboot the system

System Error: **55-121**
Description: Unknown error.
Corrective Action.

- Restart the system.

System Error: **55-302**
Description: Failed to initialize Basic Calibration.
Corrective Action.

- Check sheet , pressure rollers and glass plate
- Clean if needed

System Error: **55-319**
Description: The calibration sheet was not recognized as the right sheet for this scanner.
Corrective Action.

- Please check that the correct sheet is being used
- Inspect the sheet for scratches or wear, and replace it if the problem continues.

System Error: **55-351**
Description: CIS Alignment and Stitching Failed.
Corrective Action.

- Please check sheet.

System Error: **55-503**
Description: Color calibration failed.
Corrective Action:

- Please clean scanner.
- Please run application again.
- Inspect the sheet for scratches or wear, and replace it if the problem continues.

System Error: **55-509**
Description: IT8 file is not accessible.
Corrective Action.

- If you have received a new Calibration Sheet, please allow application to find reference file over the internet.
- If problem persists reinstall the software to correct the issue.

System Error: **55-513**
Description: The IT8 reference file could not be found on the internet.
Corrective Action.

- Brows to it manually www.contex.com and retrieve the correct IT8 file or use standard

System Error: **55-523**
Description: Sheet not recognized.
Corrective Action.

- Please clean scanner.
- Please run application again.
- Inspect the sheet for scratches or wear, and replace it if the problem continues.

System Error: **55-530**
Description: When checking new calibration the result was not within the limits
Corrective Action.

- Inspect the sheet for scratches or wear, and replace it if the problem continues.

System Error: **55-611**
Description: Unknown Scanner Status Error
Corrective Action.

- Reboot system.

System Error: **55-613**
Description: No paper was detected in the scanner.
Corrective Action.

- Place the correct sheet in the scanner.

Scanner related errors

Error code **100-50122**
Keypad Error code None
Level RD Correctable
Description pop request failed, position unknown
Potential failed comp. External, Firmware
Corrective Action.

- PC (cable, PC hardware/software etc.)
- Firmware.

Error code **100-50123**
Keypad Error code None
Level RD Correctable
Description pop request failed, invalid command
Potential failed comp. External, Firmware
Corrective Action.

- PC (cable, PC hardware/software etc.)
- Firmware.

Error code **100-00119**
Keypad Error code None
Level RD Correctable
Description Invalid SCSI command
Potential failed comp. External, Firmware
Corrective Action.

- PC (cable, PC hardware/software etc.)
- Firmware.

Error code **100-00120**
Keypad Error code None
Level RD Correctable
Description Invalid value in SCSI CDB
Potential failed comp. External, Firmware
Corrective Action.

- PC (cable, PC hardware/software etc.)
- Firmware.

Error code **100-00121**
Keypad Error code None
Level RD Correctable
Description Invalid SCSI parameter list length
Potential failed comp. External, Firmware
Corrective Action.

- PC (cable, PC hardware/software etc.)
- Firmware.

Error code **100-00123**
Keypad Error code None
Level RD Correctable
Description Unsupported SCSI parameter
Potential failed comp. External, Firmware
Corrective Action.

- PC (cable, PC hardware/software etc.)
- Firmware.

Error code **100-00124**
Keypad Error code None
Level RD Correctable
Description Invalid SCSI parameter value
Potential failed comp. External, Firmware
Corrective Action.

- PC (cable, PC hardware/software etc.)
- Firmware.

Error code **100-00125**
Keypad Error code None
Level User Correctable
Description Incorrect scanner status. Please check the paper path and reload the media.
Potential failed comp. External, Firmware
Corrective Action.

- PC (cable, PC hardware/software etc.)
- Firmware.

Error code **100-00126**
Keypad Error code None
Level RD Correctable
Description SCSI time-out
Potential failed comp. External, Firmware
Corrective Action.

- PC (cable, PC hardware/software etc.)
- Firmware.

Error code **100-00127**
Keypad Error code None
Level User Correctable
Description The scanner keyboard was used during communication with the scanner.
Potential failed comp. User
Corrective Action.

- User interaction.

Error code **100-00128**
Keypad Error code None
Level User Correctable
Description The scanner has paper jam. Please reload the media.
Potential failed comp. User, Mech, LMx, SMPS, SUx
Corrective Action.

- User interaction.
- Related mechanical parts.
- Lamp and Motor driver board (LMx)
- Switch Mode Power Supply (SMPS)
- Main controller board (SUx).

Error code **100-00129**
Keypad Error code None
Level User Correctable
Description The scanner does not support this test command in normal mode. Please restart test program.
Potential failed comp. User
Corrective Action.

- User interaction.

Error code **100-00131**
Keypad Error code None
Level User Correctable
Description The scanner is initializing. Please retry the operation when the scanner has finished initializing.
Potential failed comp. User
Corrective Action.

- User interaction.

Error code **100-00132**
Keypad Error code None
Level User Correctable
Description The scanner is warming up. Please retry the operation when the scanner has finished warming up.
Potential failed comp. User
Corrective Action.

- User interaction.

Error code **100-50231**
Keypad Error code BOOT (1)
Level RD Correctable
Description Firmware download is in progress
Potential failed comp. Firmware
Corrective Action.

- Firmware.

Error code **100-50232**
Keypad Error code ERR_GENERAL (3)
Level User Correctable
Description Firmware is incomplete. Please download new firmware
Potential failed comp. User
Corrective Action.

- User interaction.

Error code **100-50234**
Keypad Error code None
Level User Correctable
Description Scanner is in safemode. Please reboot scanner or download new firmware
Potential failed comp. User, SUx
Corrective Action.

- User interaction.
- Main controller board (SUx).

Error code **100-50237**
Keypad Error code ERR_GENERAL (3)
Level User Correctable
Description Host PC does not support SSE2 calculations
Potential failed comp. User
Corrective Action.

- User interaction.

Error code **100-20088**
Keypad Error code ERR_GENERAL (3)
Level Support Correctable
Description Motor system error, motor movement not detected.
Potential failed comp. Mech, SUx, Cable, Motor
Corrective Action.

Error code **100-50259**
Keypad Error code ERR_SU (12)
Level Support Correctable
Description Firmware unable to identify SU-board id.
Potential failed comp. SUx
Corrective Action.

- Main controller board (SUx).

Error code **100-50260**
Keypad Error code ERR_SU (12)
Level Support Correctable
Description Firmware unable to identify SU-board variant.
Potential failed comp. SUx
Corrective Action.

- Main controller board (SUx).

Error code **100-50600**
Keypad Error code ERR_SU (12)
Level Support Correctable
Description SUx, Main controller board error
Potential failed comp. SUx, SMPS
Corrective Action.

- Main controller board (SUx).
- Switch Mode Power Supply (SMPS)

Error code **100-50601**
Keypad Error code ERR_CB (13)
Level Support Correctable
Description CIS unit error
Potential failed comp. CIS, SUx
Corrective Action.

- CIS Unit (CIS).
- Main controller board (SUx).

Error code **100-50602**
Keypad Error code ERR_GENERAL (3)
Level User Correctable
Description Firmware error. Please download latest firmware.
Potential failed comp. Firmware, SUx
Corrective Action.

- Firmware.
- Main controller board (SUx).

Error code **100-50603**
Keypad Error code ERR_GENERAL (3)
Level User Correctable
Description Unrecoverable scanner state. Please reboot the scanner. Download of the latest firmware and PC application/driver may be required.
Potential failed comp. Reboot, Firmware, Software
Corrective Action.

- Reboot scanner.
- Firmware.
- PC driver/software.

Error code **100-50700**
Keypad Error code ERR_SMC (17)
Level User Correctable
Description The scanner needs to be activated.
Potential failed comp. User
Corrective Action.

- User interaction.

Error code **100-50701**
Keypad Error code None
Level User Correctable
Description Scanner serial does not match.
Potential failed comp. User
Corrective Action.

- User interaction.

Error code **100-50702**
Keypad Error code None
Level User Correctable
Description Scanner main board ID does not match.
Potential failed comp. User
Corrective Action.

- User interaction.

Error code **100-50703**
Keypad Error code None
Level User Correctable
Description Scanner Activation code has expired (sac).
Potential failed comp. User
Corrective Action.

- User interaction.

Error code **100-50704**
Keypad Error code None
Level User Correctable
Description Scanner firmware does not support one or more features.
Potential failed comp. User
Corrective Action.

- User interaction.

Error code **100-50265**
Keypad Error code ERR_SU (12)
Level Support Correctable
Description IMx, ETH internal DMA error
Potential failed comp. IMx, SUx
Corrective Action.

- Interface board (IMx).
- Main controller board (SUx).

Error code **100-50266**
Keypad Error code ERR_SU (12)
Level Support Correctable
Description IMx, ETH scan DMA error
Potential failed comp. IMx, SUx
Corrective Action.

- Interface board (IMx).
- Main controller board (SUx).

Error code **100-50267**
Keypad Error code ERR_SU (12)
Level Support Correctable
Description IMx, ETH PHY internal I/F error
Potential failed comp. IMx, SUx
Corrective Action.

- Interface board (IMx).
- Main controller board (SUx).

Error code **100-50268**
Keypad Error code ERR_SU (12)
Level Support Correctable
Description SUx, ETH PHY loopback error
Potential failed comp. SUx
Corrective Action.

- Main controller board (SUx).

Error code **100-50269**
Keypad Error code ERR_SU (12)
Level Support Correctable
Description IMx, Flash error
Potential failed comp. IMx, SUx
Corrective Action.

- Interface board (IMx).
- Main controller board (SUx).

Error code **100-50270**
Keypad Error code ERR_SU (12)
Level Support Correctable
Description IMx, RAM error
Potential failed comp. IMx, SUx
Corrective Action.

- Interface board (IMx).
- Main controller board (SUx).

Error code **100-50271**
Keypad Error code ERR_SU (12)
Level Support Correctable
Description SUx, Scanner has no MAC address
Potential failed comp. SUx
Corrective Action.

- Main controller board (SUx).

Error code **100-50705**
Keypad Error code None
Level User Correctable
Description Scanner serial cannot be changed while activated.
Potential failed comp. User
Corrective Action.

- User interaction.

Error code **100-50218**
Keypad Error code None
Level RD Correctable
Description Data never arrives in the Image
Potential failed comp. Buffer, Firmware
Corrective Action.

- Firmware.

Appendix E
Scanner License

Scanner License system, General

Brief description of how the Scanner License works.

Since this chapter is not scanner specific, some of the illustrations may not apply completely to the scanner you are working on, like number of Cameras and transition areas.

Replacing Main Board
No functional main board

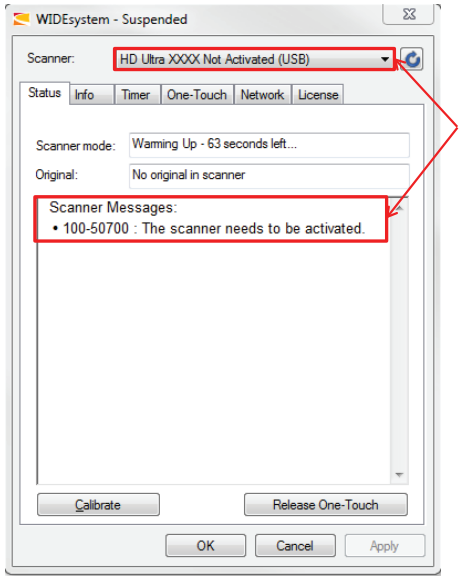
Loaner Board
Temporary Loaner

Wrong License key used to Activate Scanner

Main Board Replacement

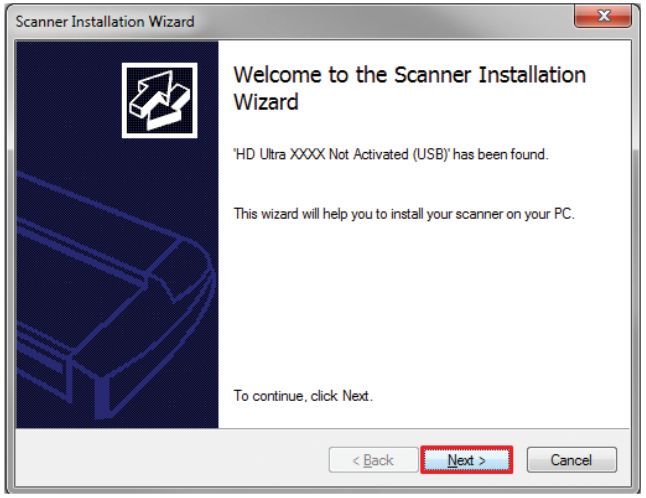
Prerequisites

After the Main Board has been replace and it has been verified that the scanner is now working correct, the scanner needs to be activated.

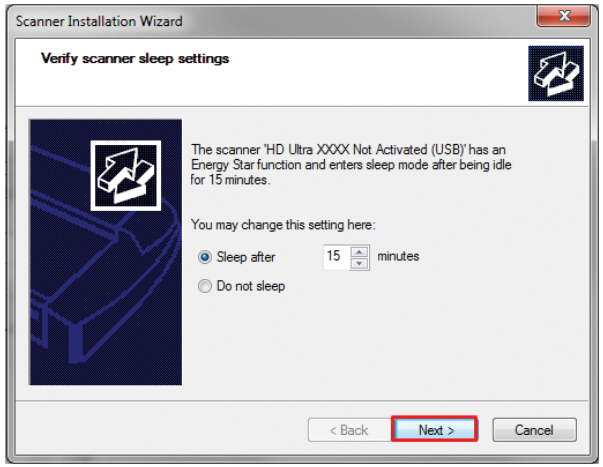


1 When the scanner boot up and the scanner is recognised by the PC it will show up in WIDEsystem as “Not Activated” and not Calibrated.

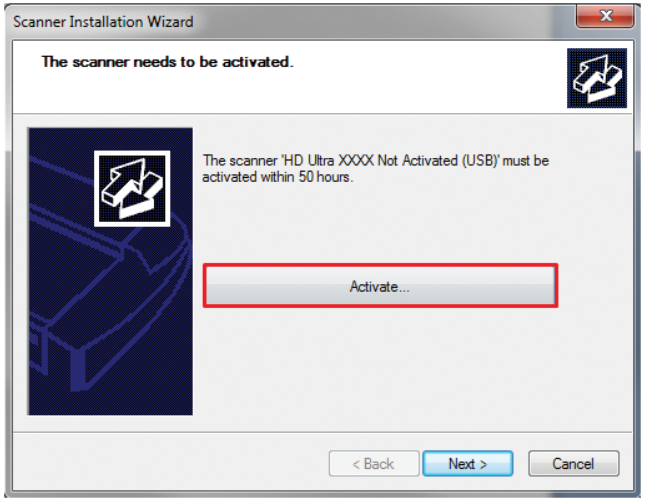
2 The Scanner Installation Wizard will automatically launch when WIDEsystem detects a new scanner.

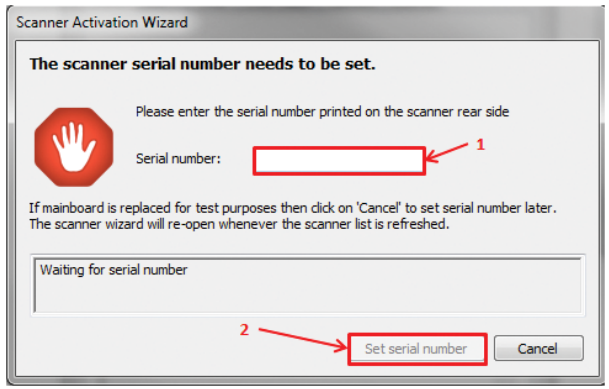

Scanner Installation Wizard
Welcome to the Scanner Installation Wizard
'HD Ultra XXXX Not Activated (USB)' has been found.
This wizard will help you to install your scanner on your PC.
To continue, click Next.
< Back
Next >
Cancel

3 The first dialogue is to set up the Energy Star functions.


Scanner Installation Wizard
Verify scanner sleep settings
The scanner 'HD Ultra XXXX Not Activated (USB)' has an Energy Star function and enters sleep mode after being idle for 15 minutes.
You may change this setting here:
Sleep after
15
minutes
Do not sleep
< Back
Next >
Cancel

4 All Main board (Spar Parts) are shipped, “Not Activated” and without a serial no.

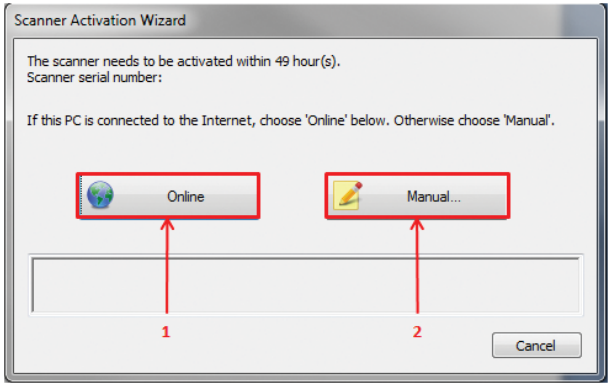

Scanner Installation Wizard
The scanner needs to be activated.
The scanner 'HD Ultra XXXX Not Activated (USB)' must be activated within 50 hours.
Activate...
< Back
Next >
Cancel

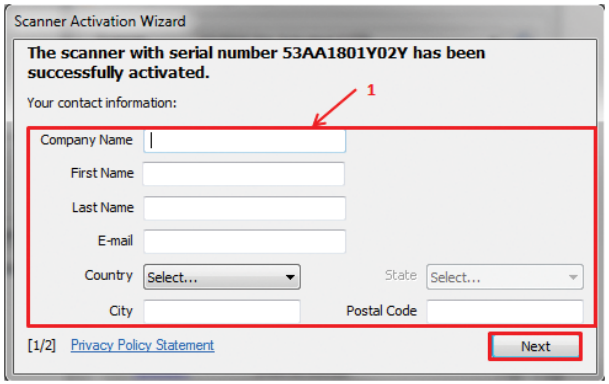

Scanner Activation Wizard
The scanner serial number needs to be set.
Please enter the serial number printed on the scanner rear side
Serial number:
1
If mainboard is replaced for test purposes then click on 'Cancel' to set serial number later.
The scanner wizard will re-open whenever the scanner list is refreshed.
Waiting for serial number
2
Set serial number
Cancel

5 In order to activate the scanner you must first type in the Serial no. from the back of the scanner.

1. If the PC is connected to the internet through, it's recommend to do the online Activation for ease and to eliminate unnecessary complication due to typo's
2. See page E-4

6



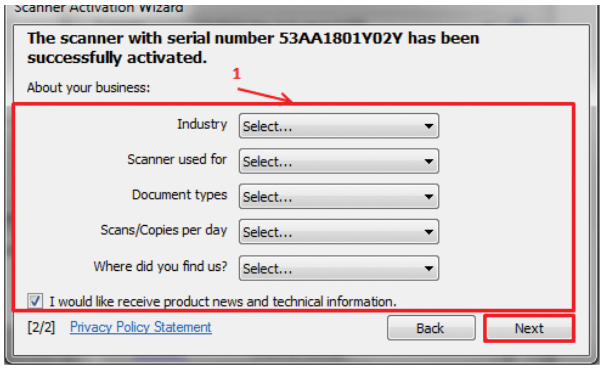


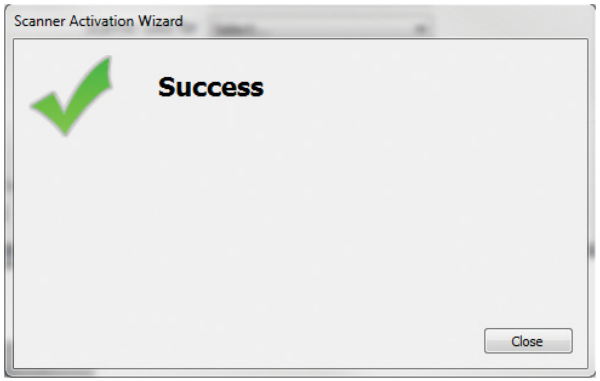
7 Type in the customers contact information

Please make the proper selections.

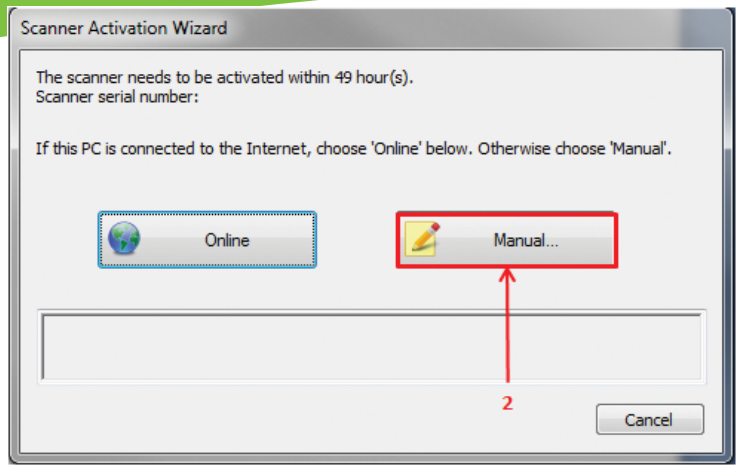
Once the Next button is clicked, the wizard will activate the scanner according to the stored registered on the server

8





9 The scanner is now ready to be calibrated.

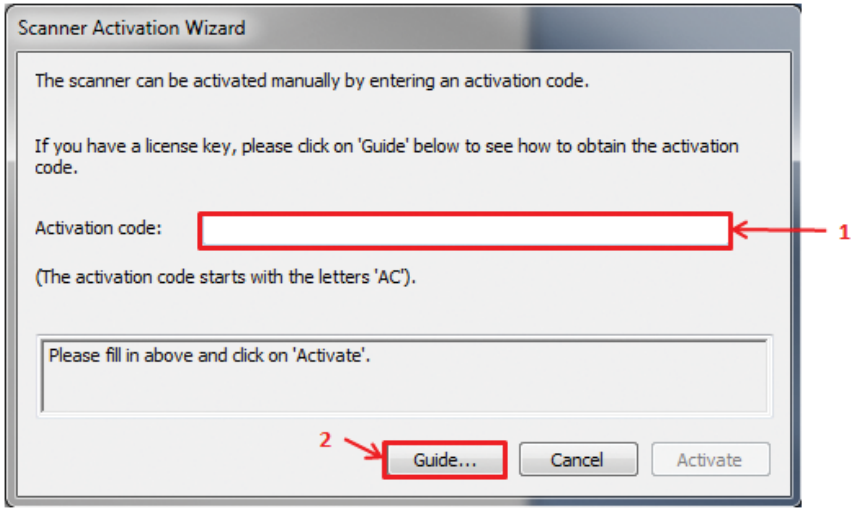

Scanner Activation Wizard
The scanner needs to be activated within 49 hour(s).
Scanner serial number:
If this PC is connected to the Internet, choose 'Online' below. Otherwise choose 'Manual'.
Online
Manual...
2
Cancel

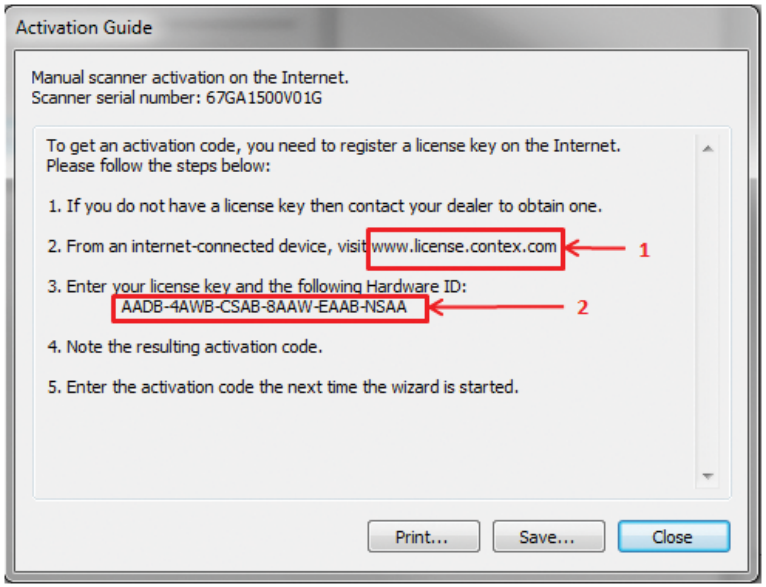
7

1. Go to the License Activation site
   license.contex.com
2. Copy the Scanners HW id.

1. Type or copy in the Activation code if is available and Click Activate.
if the Activate Code is invalid the button will remain greyed out.
2. If the Activation Code is not available selected the guide to continue

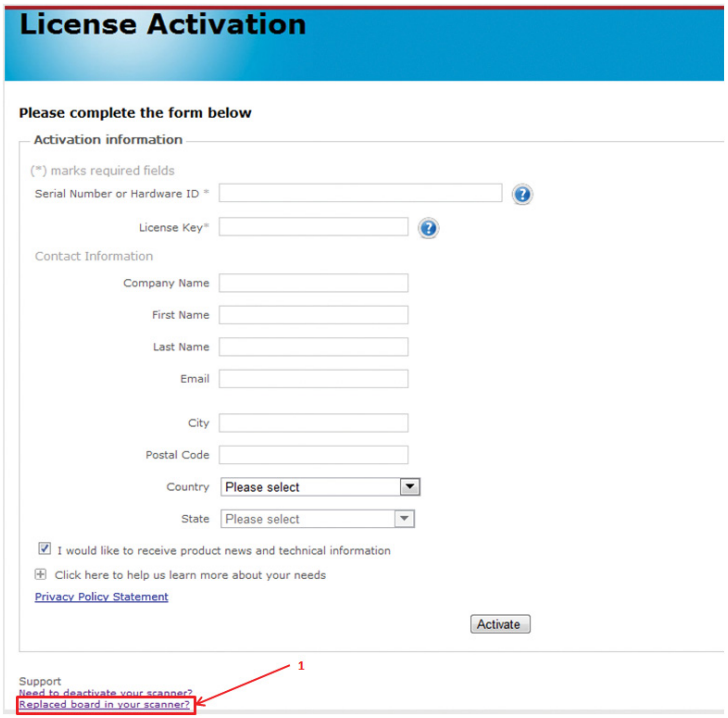
8


Scanner Activation Wizard
The scanner can be activated manually by entering an activation code.
If you have a license key, please click on 'Guide' below to see how to obtain the activation code.
Activation code:
1
(The activation code starts with the letters 'AC').
Please fill in above and click on 'Activate'.
2
Guide...
Cancel
Activate

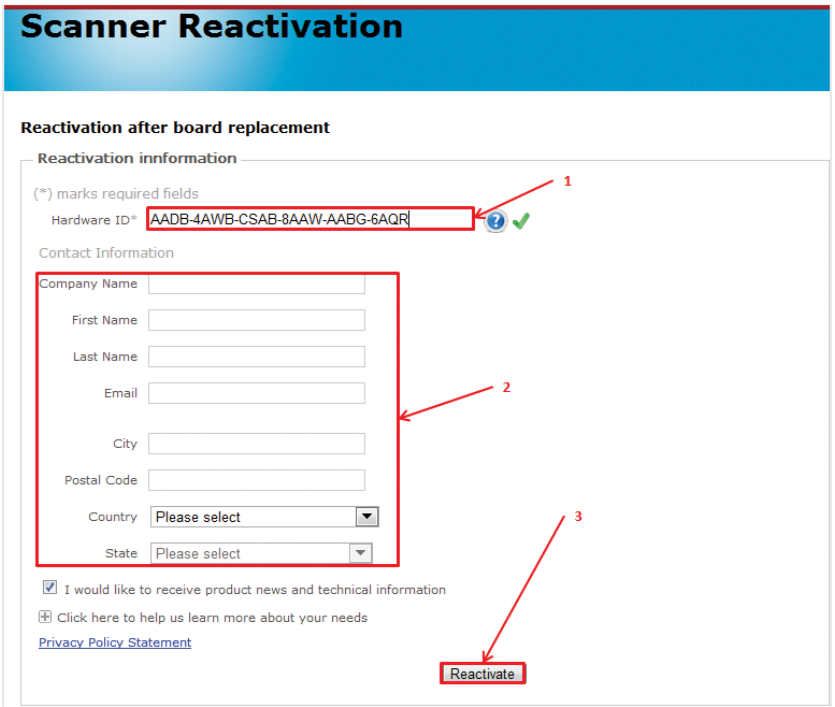

Activation Guide
Manual scanner activation on the Internet.
Scanner serial number: 67GA1500V01G
To get an activation code, you need to register a license key on the Internet.
Please follow the steps below:
1. If you do not have a license key then contact your dealer to obtain one.
2. From an internet-connected device, visit www.license.contex.com
1
3. Enter your license key and the following Hardware ID:
AADB-4AWB-CSAB-8AAW-EAAB-NSAA
2
4. Note the resulting activation code.
5. Enter the activation code the next time the wizard is started.
Print...
Save...
Close

9

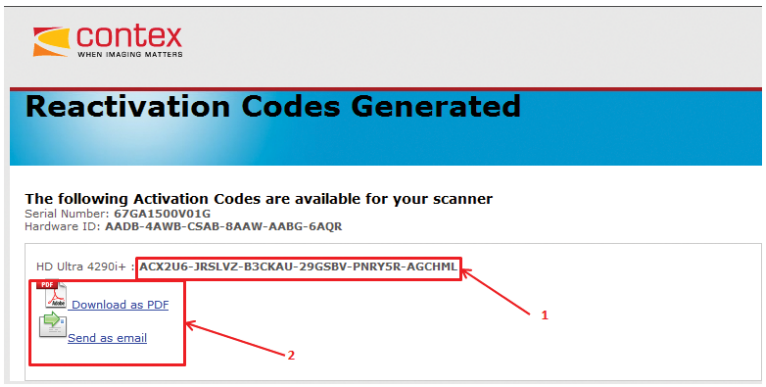
1. Go to the License Activation site
   license.contex.com
2. Copy the Scanners HW id.



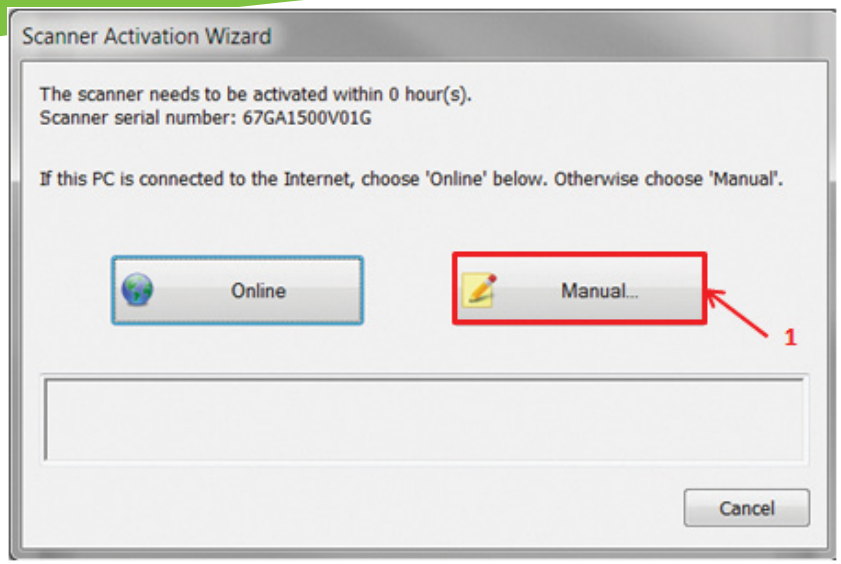
10 Click “Replaced board in your scanner”



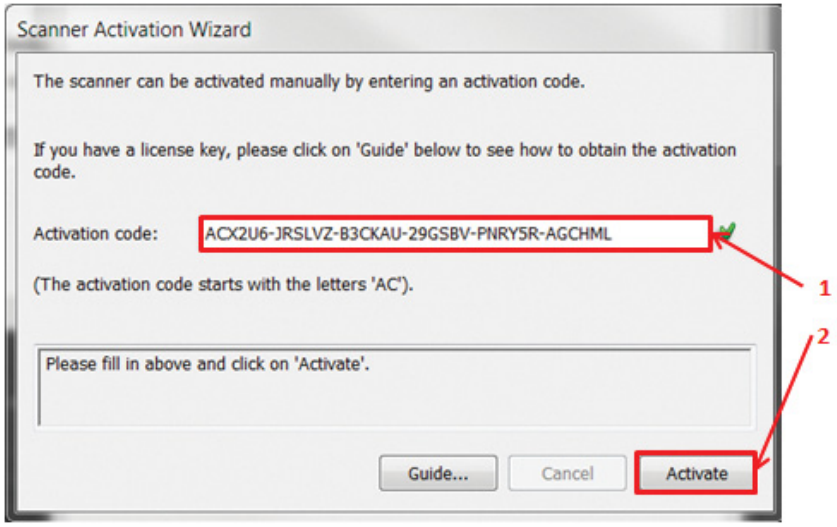
11
1. Past in the HW id.
2. Fill in the Company info.
3. Click Reactivate



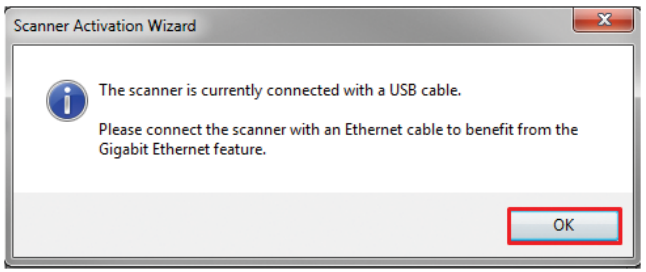
12
1. Copy the Activation code.
2. You can also email or download a PDF with the Activation code if you are not connected with the scanner.


Scanner Activation Wizard
The scanner needs to be activated within 0 hour(s).
Scanner serial number: 67GA1500V01G
If this PC is connected to the Internet, choose 'Online' below. Otherwise choose 'Manual'.
Online
Manual...
1
Cancel

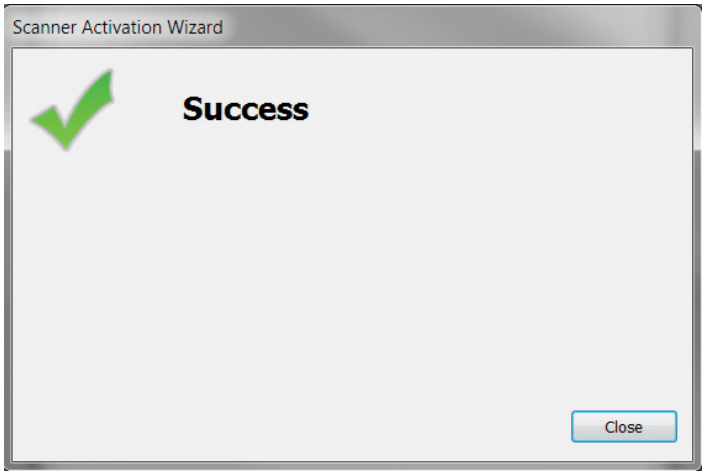
13 The first dialogue is to set up the Energy Star functions.


Scanner Activation Wizard
The scanner can be activated manually by entering an activation code.
If you have a license key, please click on 'Guide' below to see how to obtain the activation code.
Activation code:
ACX2U6-JRSLVZ-B3CKAU-29GSBV-PNRY5R-AGCHML
(The activation code starts with the letters 'AC').
Please fill in above and click on 'Activate'.
Guide...
Cancel
Activate
1
2

14 1. Type or copy in the Activation code if is available and Click Activate.
if the Activate Code is invalid the button will remain greyed out.
2. If the Activation Code is not available selected the guide to continue


Scanner Activation Wizard
The scanner is currently connected with a USB cable.
Please connect the scanner with an Ethernet cable to benefit from the Gigabit Ethernet feature.
OK

15 Since the licensed scanner has the Gigabit interface enabled, it's recommend to connect via it.



16 The scanner is now successfully activated.
Make sure to Calibrate the scanner

Temporary Board switch

If you either don't have a Spare board to install in the scanner to fix the scanner or that you just want to make sure that a new Main Board will fix the issue, you can Temporary use a Main Board from another HD ultra scanner without changing Serial no or try to change model.
But you will have to finish the repair with a "Spare Part" Main Board and go though the Activation Wizard.

Problem with Activation

If the wrong License key have been merge with a new scanner you will have to contact Support to solve the problem.

Please Contact support@contex.com with the following info.

Customer Name.:
Customer email.:
Scanner Serial no.
License key.:
Activation code.: